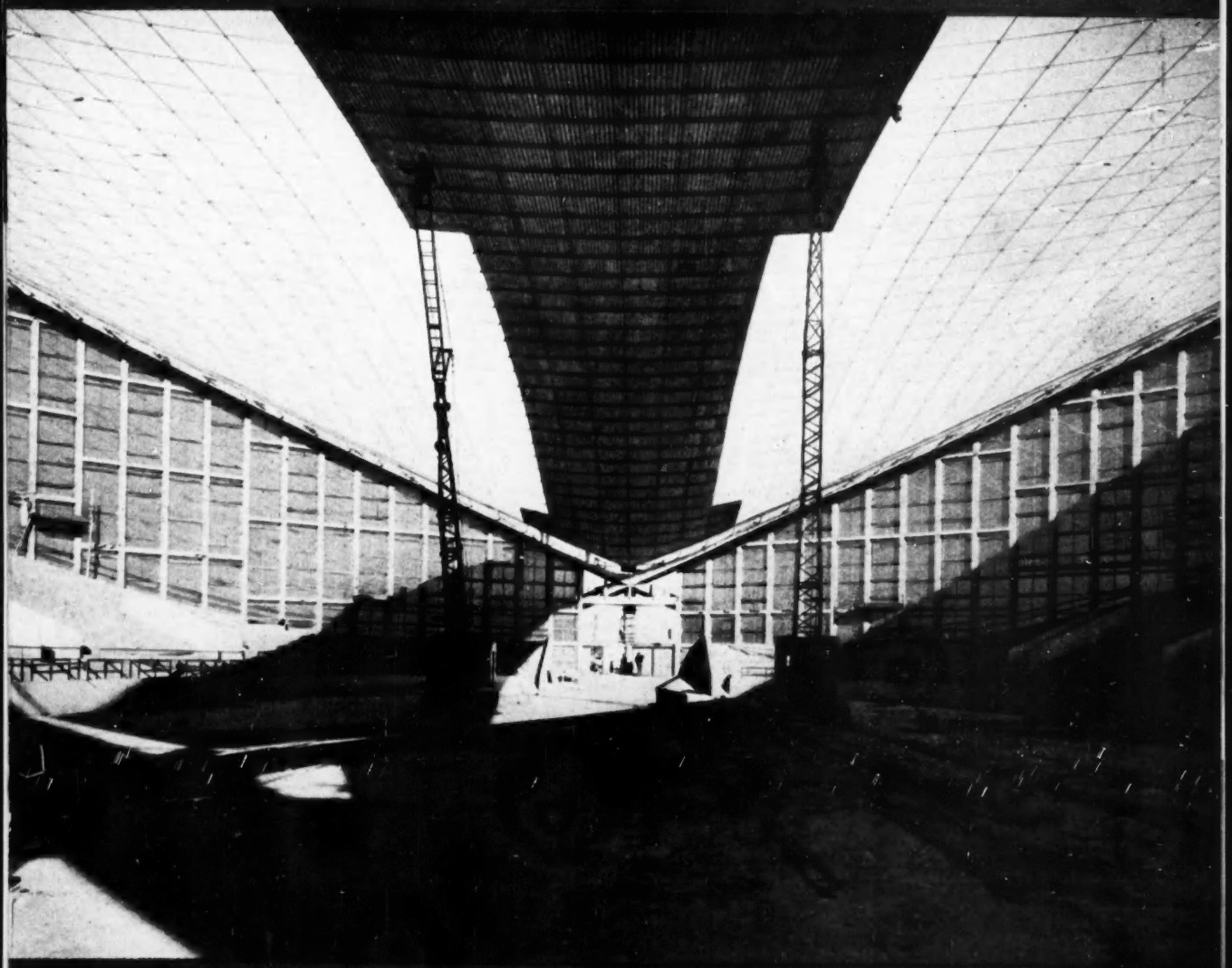
FEBRUARY 5, 1953

ENGINEERING NEWS-RECORD

SEVENTY-NINTH YEAR OF PUBLICATION



★ QUICKLIME TRIED IN ROAD WORK

★ SUBSIDENCE CONTINUES AT LONG BEACH

A McGRAW-HILL PUBLICATION

75,000-gallon Horton Elevated Tank with ellipsoidal-bottom installed for fire protection at the Crest Manufacturing Company.

It's good business to anticipate emergencies—to have first aid always on hand when a serious situation arises.

For that reason, the Crest Manufacturing Company had a 75,000-gallon Horton* ellipsoidal-bottom elevated tank and an automatic sprinkler system installed at its Edgefield, S. C., plant for fire protection. This tested combination stands ready 24 hours a day—7 days a week with a dependable supply of water that can be instantly brought into play. And most important, the complete operation—the opening of the sprinkler heads and the flow of water—is automatic. Protection of this type pays for itself by preventing property losses and reducing insurance premiums.

Horton elevated tanks are built in standard capacities from 15,000 to 500,000 gallons with ellipsoidal-bottoms—and 500,000 to 3,000,000 gallons with radial-cone bottoms.

Horton elevated tanks installed to provide gravity water pressure for automatic sprinkler systems are built in accordance with the requirements of either the National Board of Fire Underwriters, the Inspection Department of the Associated Factory Mutual Fire Insurance Companies, or the Factory Insurance Association.

For complete information, please write our nearest office. There is no obligation on your part. Please state capacity, height to bottom, location, and type of insurance carried.

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Here's a Big Advance in Bulldozing Performance

This bulldozing team introduces new dirt-moving ability; a new, narrower-width blade for transporting by highway; new ease of servicing and operation — all at a new low cost.

Here are some specific characteristics that make it such a productive combination for many dozing jobs:

A great tractor. This popular Allis-Chalmers HD-9 Tractor has power, weight and balance that put it in a class by itself.

A revolutionary team. Here is a tractor-dozer combination, designed as a unit, which compares in performance with conventional "dozers" weighing from five to six thousand pounds more.

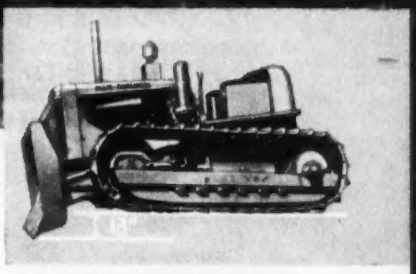
No push-beams. A completely new idea in bulldozer engineering, the Baker 9X blade is mounted directly to the HD-9 main frame. Tractor main frame and dozer are raised and lowered as a single unit.

Lighter weight — better stability. Almost 1,150 lb. lighter than standard dozer. Costs less to buy. And with lighter blade mounted 15 inches closer, tractor center of gravity is not upset. No excess wear on front truck wheels and support rollers.

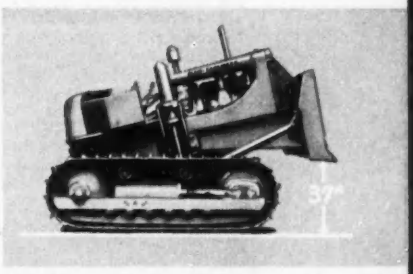
Big dirt mover. Because of extra clearance, greatly increased track oscillation and better balance, this team is a phenomenal performer in mud and tough going. And with blade fully six inches higher, capacity is kept on par with conventional blade.

Simplified servicing. 1,000-hour lubrication of truck wheels, idlers and support rollers. Dozer mounting does not interfere with engine accessibility. No removal of major tractor assemblies.

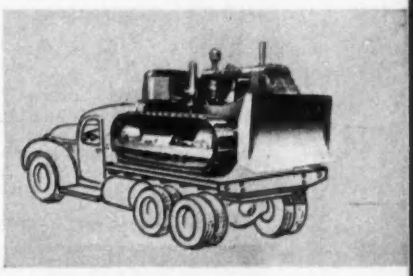
Easy to operate. Just by pulling a single lever, operator can shift from any of the six forward speeds to any of the three high-speed reverses. This, plus narrow, frame-mounted blade, makes the HD-9 particularly fast and maneuverable.



BITES DOWN HARD. Full 13-in. drop below ground, positive down pressure plus steep angle of penetration mean fast digging.



HIGH LIFT. Full 37 in. above ground. Excellent for pushing over trees and stumps and clearing brush.



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ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

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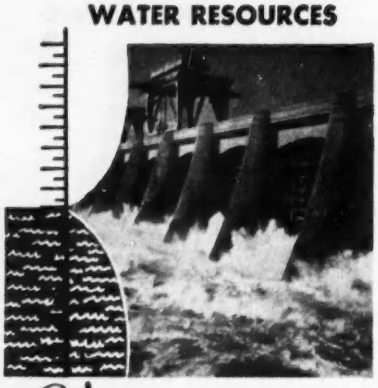
FOR UTILIZING WATER RESOURCES



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ENGINEERING NEWS-RECORD

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Volume 150 FEBRUARY 5, 1953 No. 6

WALDO G. BOWMAN
Editor

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ROBERT F. BOGER
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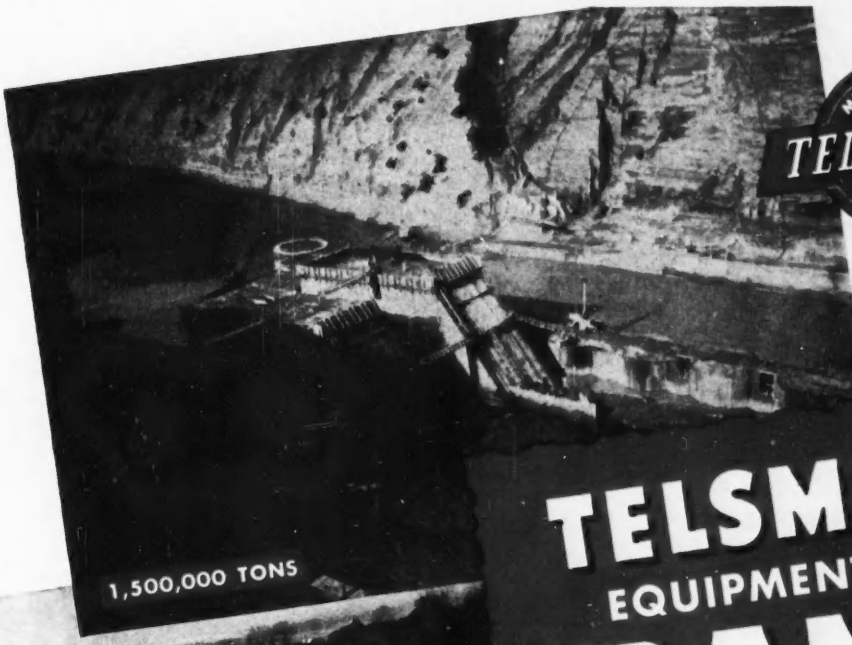

Mount Morris Dam, N. Y. The 300-350 tons per hour rock crushing Plant was Telsmith designed and equipped.

Philpott Dam, Va. Here, too, the crushing-screening equipment was Telsmith.

TELSMITH EQUIPMENT FOR DAMS

OTHER DAMS BUILT WITH TELSMITH EQUIPMENT

Alatoona Dam, Georgia
Boysen Dam, Shoshoni, Wyo.
Buggs Island Dam, Virginia
Carpenter Dam, Arkansas
Cascade Dam, Washington
Center Hill Dam, Tennessee
Clark Hill Dam, Augusta, Ga.
Conowingo Dam, Conowingo, Md.
Dale Hollow Dam, Tennessee
Davis Dam, Nevada
El Presidente Dam, Mexico
Fort Gibson Dam, Oklahoma
Grand Coulee Dam, Washington
Kortes Dam, Wyoming
Norfork Dam, Arkansas
South Holston Dam, Tennesse
Watauga Dam, Tennessee

● Huge dam projects and Telsmith Aggregate Plants go together. Many dam builders call in Telsmith engineers for consultation as to the proper plant layout and the right equipment to use. Then Telsmith makes the detailed drawings for the erection of the plant and furnishes most of the machinery. Telsmith designed plants have proven their efficiency on many large projects and Telsmith equipment has a world-wide reputation for the production of low-cost aggregate. The ruggedness of Telsmith equipment is strikingly demonstrated by long life in severest service, on successive projects. After producing 1,500,000 tons of aggregate at Center Hill Dam, the same Telsmith equipment turned out about the same amount of aggregate at Buggs Island Dam.

Save time and money. Consult Telsmith Engineers. Ask for Bulletin 266.

MP-8

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Marens Eqpt. Co., 432 Main St., Rochester, Mich. • Clyde Eqpt. Co., Portland 9, Ore., & Seattle 4, Wash. • Mines Eng. & Eqpt. Co., San Francisco 4, Calif.

Rish Eqpt. Co., Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 10, Va. • Interstate Equipment Co., Statesville, N. C.

Mobile CONCRETE MIX PLANT

21-FOOT discharge

(HIGHER WITH SPECIAL BOOM)

KOEHRING 16-E *twinbatch,*

with 6 m.p.h. rubber-tired mobility and high elevating boom, has unlimited application on all types of concrete construction work . . . for buildings, retaining walls, pilings, culverts, bridges, tunnels, widening highways and airport strips, batching into trucks, etc. Bucket rides on 60° elevating boom . . . discharges controlled batch into overhead forms, hoppers or chutes at a dumping height of 21 feet (higher with special boom). Boom also swings in an arc of 160° . . . speeds pouring of floors, foundations. This heavy-duty 16-E easily mixes and distributes up to 50 cu. yds. per hour. 7-second skip hoist, split-second Autocycle mixing controlled by Koehring Batchmeter, and vertical syphon-type water tank, all assure consistent, maximum-strength concrete at top batching speeds.

Productive work-time is increased because mobile, rubber-tired 16-E works over pavement without planking, makes self-powered moves job-to-job at 6 m.p.h. Get more facts from your Koehring distributor, or write for literature.

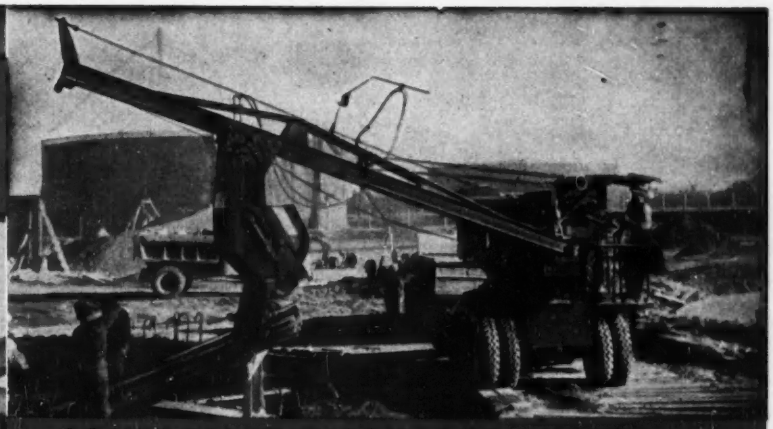
KOEHRING CO., Milwaukee 16, Wis.

(Subsidiaries: JOHNSON • PARSONS • KWIK-MIX*)*

KOEHRING 16-E *twinbatch*®

PAVERS • FINISHERS • CONSTRUCTION MIXERS • CRANES • EXCAVATORS • DUMPTORS® • MUD-JACKS® ...

height



CONTROLLED-DISCHARGE BUCKET

has clamshell-type door, hydraulically controlled . . . can be opened or closed at any time for gradual discharge. 24 cu. ft. water-level capacity is more than ample for the full 16 cu. ft. concrete batch, plus 10% overload.

BOOM SWINGS IN 160° ARC...

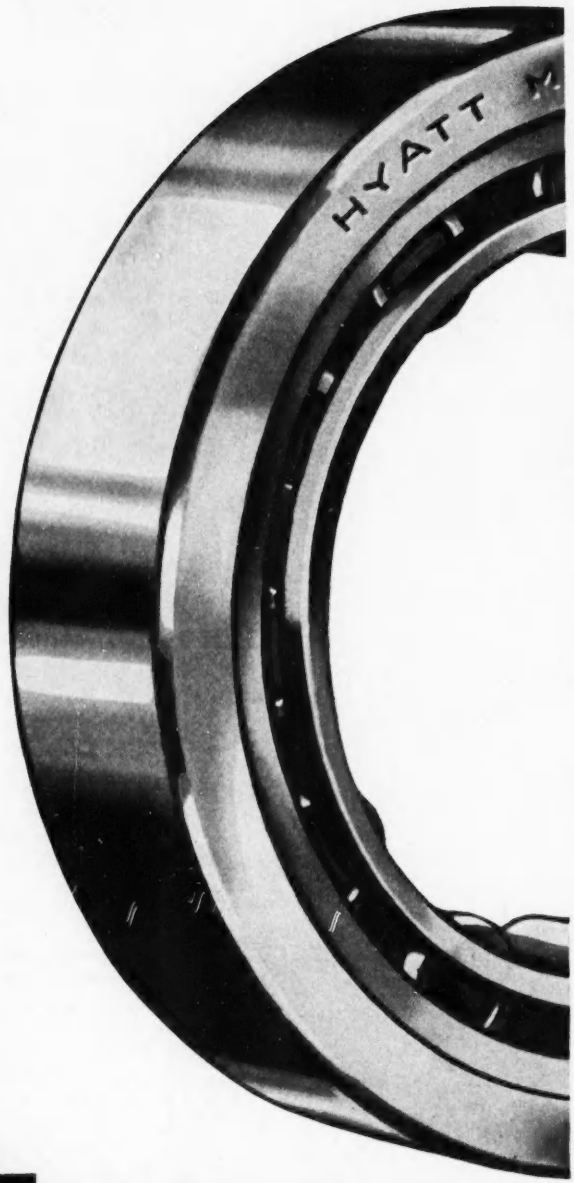
. . . double-channel distributing boom on the Koehring 16-E *twinbatch* is power controlled . . . swings in a 160° arc, elevates 60° . . . is self-locking and holds securely in any position for accurate spotting and discharge.

Ask, too, about production advantages of big 34-E *twinbatch* and Longitudinal Finisher for highway, airport, other major paving jobs.

SET-UP FOR CENTRAL-MIX

Producing concrete for factory floors and footings on a building construction job (below), a Johnson Lo-Bin® Trolley Batcher weighed the materials . . . Koehring 16-E *twinbatch* handled all mixing, and discharged concrete into overhead storage hopper . . . Kwik-Mix 10 cu. ft. Moto-Bug® power wheelbarrows hauled and poured the concrete into building forms.

10 designs for heavy duty



Ten different Hyatt Hy-Load designs, each in a variety of widths and sizes, assure you the right bearing for every radial need.
Four Hy-Load designs have separable inner races, two have separable outer races and four are non-separable. All are high-capacity, cylindrical roller bearings for the heaviest radial loads and light or intermittent thrust loads.
All separable parts are freely interchangeable within the same size. This permits non-selective fitting after pre-assembling the two bearing parts in separable machine elements.
Whatever your radial load problem, Hyatt Hy-Loads or some of the other types of Hyatt bearings can provide the answer. Because Hyatt offers industry's most complete line of straight radial roller bearings. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

high production on Turner Turnpike with...

★ "Eucs" on the Turner Turnpike averaged over 13 m.p.h. for the loaded haul. Top speed of 28.2 m.p.h. with full payload means more trips per hour.

Euclid SCRAPERS

On a section of the new Turner Turnpike between Tulsa and Oklahoma City, Amis Construction Co. had a really tough job for scrapers—hard clay and sand rock.

Despite the difficult digging, three "Eucs" of 15.5 cu. yd. struck capacity averaged 375 bank yards per hour on a round trip of 3,020 feet, enabling the contractor to complete this work ahead of schedule.

Easy loading, high travel speed, and fast dumping here proved what contractors have learned on many other earth moving projects —that for day-in and day-out performance you can't beat Euclid Scrapers.

Your Euclid distributor may be able to show you how Euclid equipment can step up production and lower costs on off-the-highway moving of earth, ore, rock and coal. Have him show you performance figures on work similar to yours.

★ Positive, fast acting hydraulic controls permit spreading the load in thin, even layers. Roll-out ejector dumps all types of material fast and clean.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

CABLE ADDRESS: YUKLID CODE: BENTLEY

Engineering News Record Photo

the Greeks had no word for it

Design of box girder on columns was chosen to meet problem of height needed to cross multiple arch viaduct and to adapt easily to curvature of 200′ radius. Compared with T-beams, the box girder has less area and weight at midspan, web and flange thickness easily varied to stress requirements and high torsional strength.

Ted Kell Air Photo

What so oddly suggests a Doric colonnade is actually a viaduct for east-bound traffic leaving New York's George Washington Bridge tunnel. Its 26′ roadway and two 4′ walks are cantilevered out on both sides from a continuous hollow-box concrete girder, built in 3 sections totalling ten 66′ spans. This is supported by a single row of slender (6′ 6″) columns up to 62′ in height. The columns are steel shells, filled with concrete.

This spare and open-looking structure was poured with ready-mixed concrete, processed in truck mixers *certified* to have the correct design, capacity, mixing speed, mixing action and accurate water control to insure a homogeneous concrete of pre-determined strength.

Look for this Badge of Dependability on Truck Mixers:

You have a right to insist on this Rating Plate on any truck mixer that serves your jobs. It is available to all who comply with the quality standards which have been established by the Truck Mixer Manufacturers Bureau and approved by the National Ready Mixed Concrete Association.

These member manufacturers comply with Bureau standards:

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Chain Belt Company
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Concete Transport Mixer Co.
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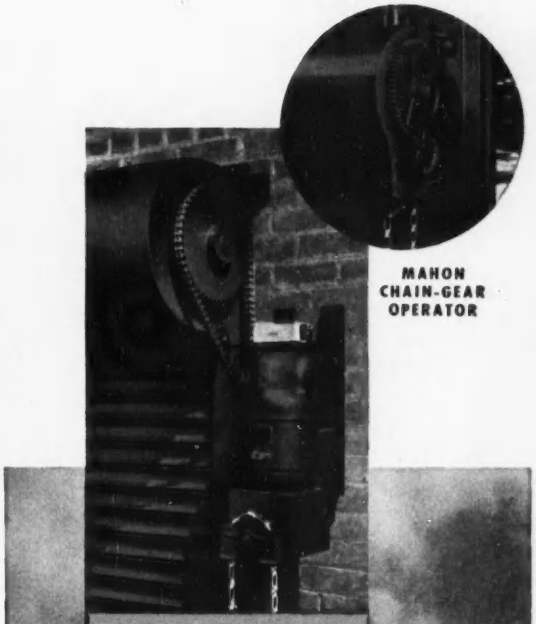
Construction Machinery Co.
Waterloo, Iowa

The Jaeger Machine Co.
Columbus, Ohio

The T. L. Smith Co.
Milwaukee, Wis.

Worthington Corporation
Plainfield, N. J.

Rolling Steel DOORS



MAHON CHAIN-GEAR OPERATOR

MAHON STANDARD POWER OPERATOR 920-P

Manually, Mechanically, or Power Operated

Illustrated below is another excellent example of Rolling Steel Doors installed in a special purpose building where no other type of door would meet the requirements. Because this is a foundry building with high truss clearance, vertical acting doors with no overhead obstructions above the floor adjacent to the door opening were demanded by the owners . . . other requirements were: that the doors shut off no light above the lintel when open, and, that the opening and closing action of the doors occupy no usable space either inside or outside of the door opening. The vertical roll-up action of rolling steel doors met these demands perfectly . . . and, in addition, their all-metal construction provided permanence, better protection against intrusion and fire, and assured the owners a lifetime of continuous trouble-free service. Rolling Steel Doors will meet your requirements better too. But, when you select a rolling steel door, know the facts—check and compare the specifications carefully . . . you will find that Mahon Rolling Steel Doors have built-in extra value features which you will want in the doors you buy. See Sweet's Files for complete information including specifications, or write for Catalog G-53.

THE R. C. MAHON COMPANY

Detroit 34, Michigan • Chicago 4, Illinois • Representatives in all Principal Cities

Manufacturers of Rolling Steel Doors, Grilles, and Automatic Closing Underwriters' Labeled Rolling Steel Doors and Fire Shutters; Insulated Metal Walls and Wall Panels; Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms.

ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

Fifteen Mahon Rolling Steel Doors installed in a new special purpose building recently constructed as an addition to a large midwest foundry.

MAHON

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READER COMMENT

Has branch in Canada

Sir: I have just read your story in the Jan. 8 issue about American construction companies that have moved north into Canada. Your reporter has failed to mention F. H. McGraw Company of Canada, Ltd. The McGraw Company of Canada, with offices in Montreal and Quebec City, was formed in 1941 and in the 12 years that it has been working in Canada has completed many important industrial and commercial building projects, including the huge Welland chemical plant at Welland, Ont.

Robert F. Kane
Public Relations Dir.
F. H. McGraw & Co.

Early welded buildings

Sir: In the article "Construction has adventure for George A. Fuller Company" (ENR Oct. 30, 1952, p. 49), it was stated that in "this period" (1933-37) the Fuller company built the first all-welded steel building in the U. S. for the General Electric Co., at Pittsfield, Mass.

This statement we desire to challenge, because from December, 1929, to February, 1931, the Mellon-Stuart Co. was engaged in building the Engineering Building for the Westinghouse Electric & Mfg. Corp. at East Pittsburgh, at a cost of $798,146. This building is all-welded structural steel, 13-stories high, and while it was not the first building welded, it was at that time the largest all-welded structure in the world.

Also from October, 1929, to November, 1930, the Mellon-Stuart Co. was engaged in the construction of a research building for Westinghouse at Forest Hills, Pa. This building is remarkable because not only was all the steel welded, but the fabrication of the structural steel was done in the field under the supervision of the Mellon-Stuart Co.

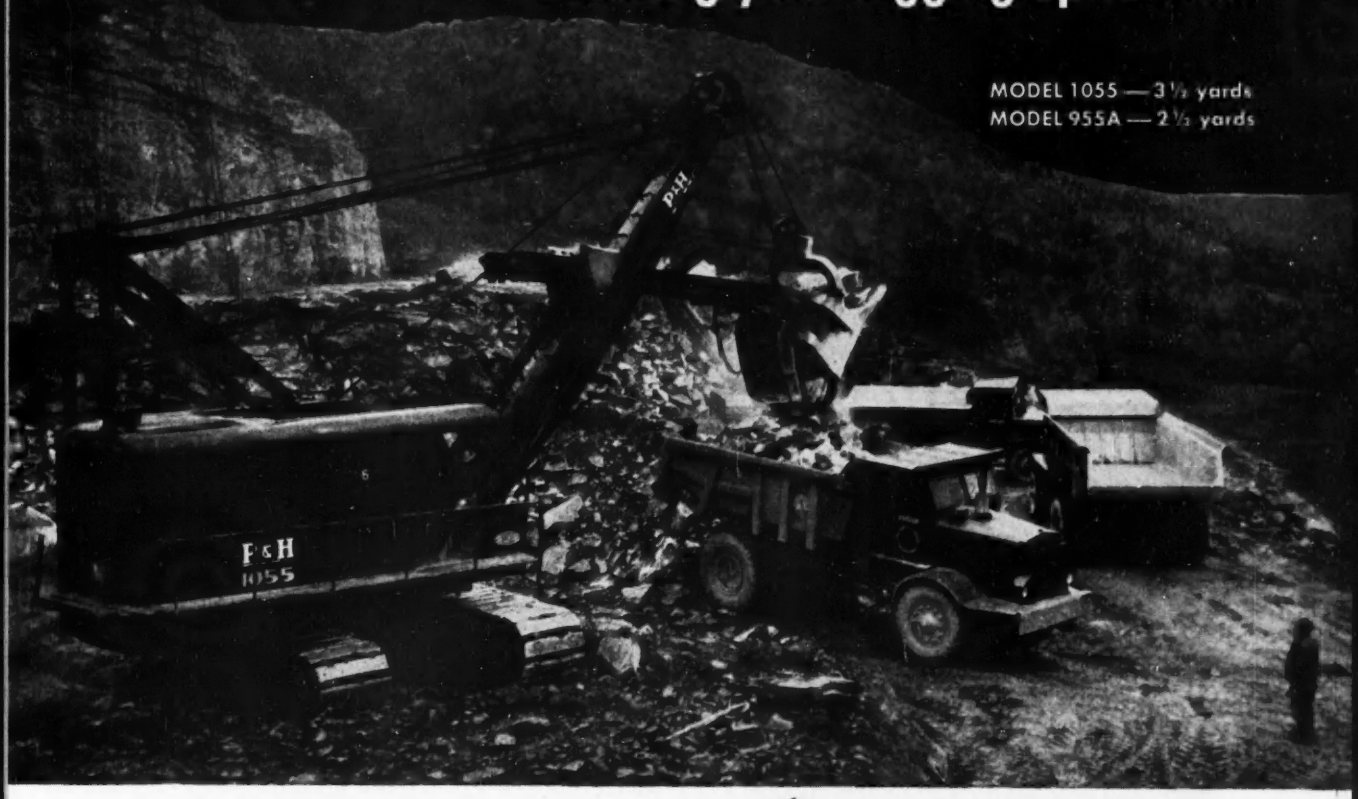
Edward P. Mellon II
Chairman of the Board
Mellon-Stuart Co., Pittsburgh

Editor's Note: Since the GE building welded by Fuller was built in 1931, Mr. Mellon's Westinghouse buildings antedate it. There were, as he states, even earlier all-welded buildings. But it is usually conceded that the first truly welded building was the 5-story Westinghouse factory at Sharon, Pa., completed at the end of 1926 by the American Bridge Co. In

(Continued on page 14)

ROCK RATED

to bring your digging up to date



You have the jump on costs when your new P&H takes over the tough digging jobs. Why? Because there's no other machine to match its performance. You have the speed — a 15% to 25% faster digging cycle — for bigger production. You have the all-welded strength to take shock loads that would K.O. less rugged machines. You have the stability to exert more power at the tooth point. That gives you added capacity.

If you're ready to cut your costs, these P&H's are ready to help you.

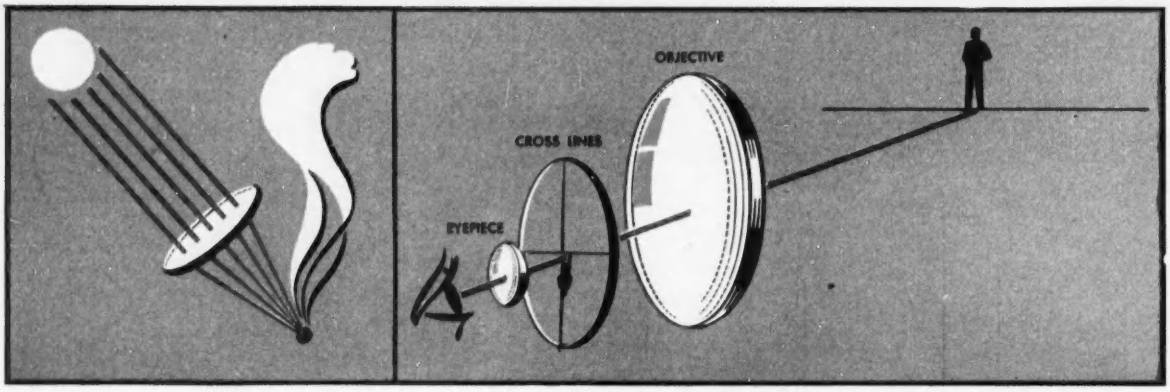
P&H MAGNETORQUE*
ELECTRIC SWING

the greatest shovel improvement in 20 years. It's smoother, faster, more dependable. It eliminates the old swing frictions with their constant headaches and replacement costs. Magnetorque lasts the life of your machine. You should know the facts about it!

**T.M. of Harnischfeger Corporation for electro-magnetic type coupling.*

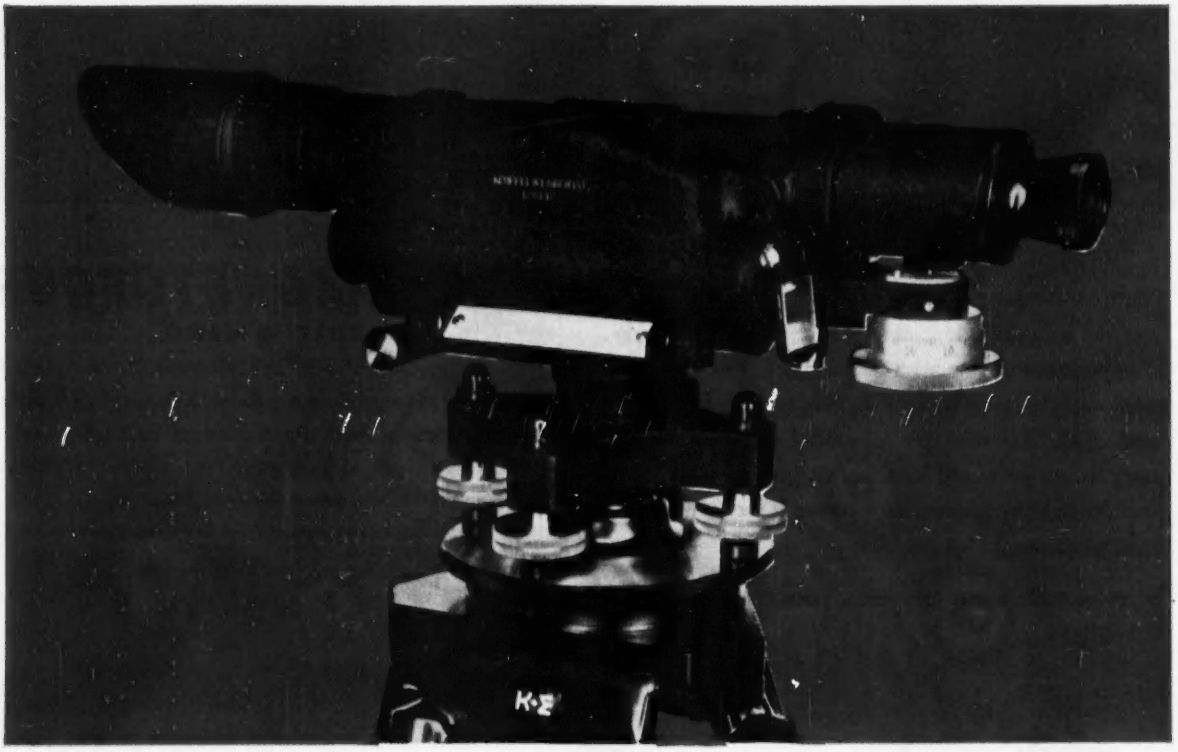
P&H LARGE EXCAVATOR DIVISION
HARNISCHFEGER CORPORATION
MILWAUKEE 46, WISCONSIN

How the image you see gets PARAGON®



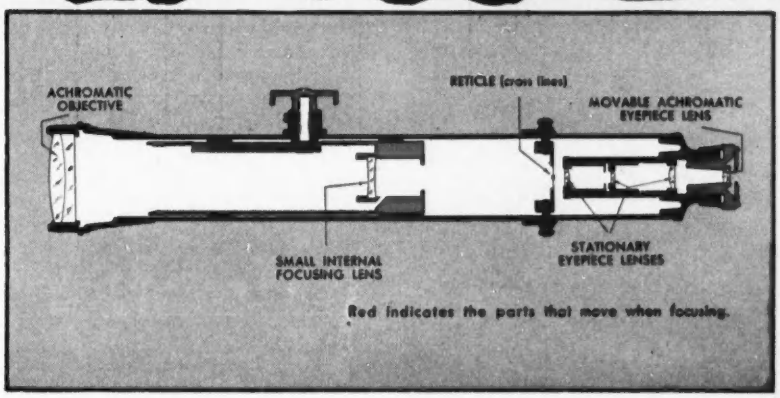
Even an ordinary reading glass can produce an image of sorts. That happens when the sun's rays are focused on a piece of paper as shown. All the rays passing through the lens concentrate at approximately one point where they form a small inverted picture or image of the sun.

By means of a lens, rays from any object at a distance can be made to concentrate inside a telescope in the same way. They form a tiny inverted picture of the object. If a screen like the ground glass of a camera were placed there and viewed through a magnifying glass, the actual picture of the distant object could be seen clearly. The lens that brings the tiny picture into a telescope is called the objective, and the small but powerful microscope that brings it out of the telescope into the eye is called the eyepiece.



into and out of a Telescope

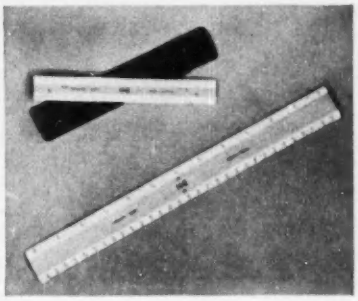
The Right Angle


ACHROMATIC OBJECTIVE
RETICLE (cross lines)
MOVABLE ACHROMATIC EYEPIECE LENS
SMALL INTERNAL FOCUSING LENS
STATIONARY EYEPIECE LENSES
Red indicates the parts that move when focusing.

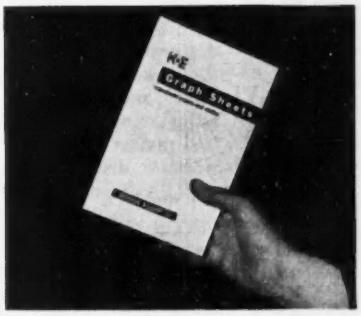
Cross lines so fine as to be almost invisible can be placed inside the instrument at exactly the place where the miniature picture is formed. Then the eyepiece will greatly magnify not only the picture but the cross lines as well so that both are seen together. Basically, that is the principle of the telescopes used in K&E PARAGON surveying instruments and K&E optical tooling equipment. These contain additional refinements, such as a movable internal lens for focusing and extra lenses in the eyepiece that invert the picture a second time, so that the eye sees it right side up.

Naturally, the above description is extremely elementary. In fine telescopes, such as those made by K&E, every optical part must be made with surpassing accuracy so that the rays of light are not scattered. It is for this reason that K&E designs, grinds and polishes its lenses with an accuracy measured in millionths of an inch. The result is superior definition with unusual contrast and brightness. Minute detail can be clearly distinguished, and cross lines appear jet black.

These are the exacting standards to which K&E builds instruments for engineers, surveyors and builders, as well as optical tooling equipment. The latter makes possible the application of surveying methods to manufacturing and construction problems involving high-precision positioning and alignment. Already these techniques have revolutionized tooling in the aircraft industry and are being adopted in other fields. Ask your K&E Distributor or Branch for details on what these superlative instruments can do for you.



Measuring scales are in constant use on every drawing board. For high quality and accuracy, use K&E PARAGON engine divided scales. They are made of the highest grade boxwood with scale faces of white plastic, permanently cemented. The graduations are filled with dense black pigment for high visibility against the white background.



There is a K&E graph sheet for almost every purpose. In a selection of 300 forms you can find graph sheets for plotting scientific data, forms for sketching and drawing, both mechanical and architectural, or for surveying and mapping. Also, business and financial forms of all types. All are on high quality drawing paper and on the finest tracing paper.

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Only two basic parts **. . . that's all you'll find inside the new Humdinger. Every other wearing part has been eliminated . . . making this amazing new pump the simplest ever built . . . the easiest to maintain . . . the world's most advanced contractors' pump.**

Here's a Self-priming Centrifugal that's years ahead. The Humdinger is *really new*... completely different... engineered to give Contractors the finest pumping equipment available.

COMPLETE RANGE OF SIZES
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SINCE 1878

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203 Atlantic St., Hackensack, N. J.

READER COMMENT

1927, a factory building at the Philadelphia plant of General Electric was welded by American Bridge Co. And in the same year a 2-acre Westinghouse factory building at Derry, Pa. was welded by Jones & Laughlin Steel Co. A 66,000 sq ft warehouse with 60 ft span trusses was welded in the field in 1928 by the Associated Oil Co. at Emeryville, Calif. Also in 1930 the Dallas Power and Light Co. laid claim to the tallest welded building—19 stories, 246 ft—built by Mosher Steel & Machinery Co. At about the same time Bethlehem welded a 376-ft high powerhouse at Atlantic City and American Bridge welded an 11-story Hot Springs, Ark., hotel that rose 180 ft.

CALENDAR

American Road Builders Assn., Hotel Statler, Boston, Mass., Feb. 9-11.

N. Y. State Conference for Municipal Officials, Hotel New Yorker, New York City, Feb. 11.

American Concrete Institute, annual convention, Statler Hotel, Boston, Mass., Feb. 17-19.

Interamerican Municipalities Congress, Montevideo, Uruguay, Feb. 20-28.

Ohio Water Clinic, Ohio State University, Columbus, Feb. 19-20.

Illinois Conference on Highway Engineering, Urbana, Feb. 24-26.

Industry Conference on Air Pollution Abatement, Hotel Statler, Detroit, Mich., Feb. 26-27.

American Concrete Pipe Association, annual convention, Baker Hotel, Dallas, Tex., Feb. 26-28.

American Concrete Pressure Pipe Assn., annual convention, Baker Hotel, Dallas, Tex., Feb. 25.

American Concrete Agricultural Pipe Assn., annual convention, Baker Hotel, Dallas, Tex., Feb. 26.

Spring meeting, American Society of Civil Engineers, Fairmount Hotel, San Francisco, Calif., Mar. 2-6.

Association of State Highway Officials of the North Atlantic States, Hotel Traymore, Atlantic City, N. J., Mar. 3-6.

Ohio Society of Professional Engineers, annual meeting, Neil House, Columbus, Mar. 5-7.

Symposium on Air Pollution Control, Wagner College, Staten Island, N. Y. City, Mar. 7.

N. J. Sewage and Industrial Wastes Assn., Hotel Traymore, Atlantic City, N. J., Mar. 11-13.

N. Y. State Association of Highway Engineers, Hotel Statler, Buffalo, N. Y., Mar. 17-20.

American Railway Engineering Association, annual meeting, Palmer House, Chicago, Mar. 17-19.

Southern Municipal and Industrial Wastes Conference, University of North Carolina, Chapel Hill, Mar. 19-20.

Third Midwestern Conference on Fluid Mechanics, University of Minnesota, Minneapolis, Mar. 23-25.

"Undoubtedly the most significant development in the field of street and highway maintenance . . ."
—ENGINEERING NEWS-RECORD

THE NEW BARBER-GREENE *Mixall* MEETS THE NEED FOR ALL MAINTENANCE AND SMALL PAVING JOBS

The quotation at the top of this page is typical of impartial observers who have seen the new Barber-Greene MIXALL perform. There is widespread agreement among editors, road builders and government officials that the need for a machine capable of on-the-spot production of even the highest type hot mixes has been answered by the development of the MIXALL.

Primarily designed for "stitch in time" maintenance to prevent major break-ups of much needed roads, the MIXALL also opens the market for surfacing of sidewalks, driveways, parking lots, service stations, playgrounds and countless others.

Once you see the MIXALL perform, you'll quickly recognize the business-building possibilities it holds for you. See your Barber-Greene Distributor for the full story—or write for information.

Barber-Greene BG

Aurora, Illinois, U. S. A.

JENKINS PRACTICAL PIPING LAYOUTS

65

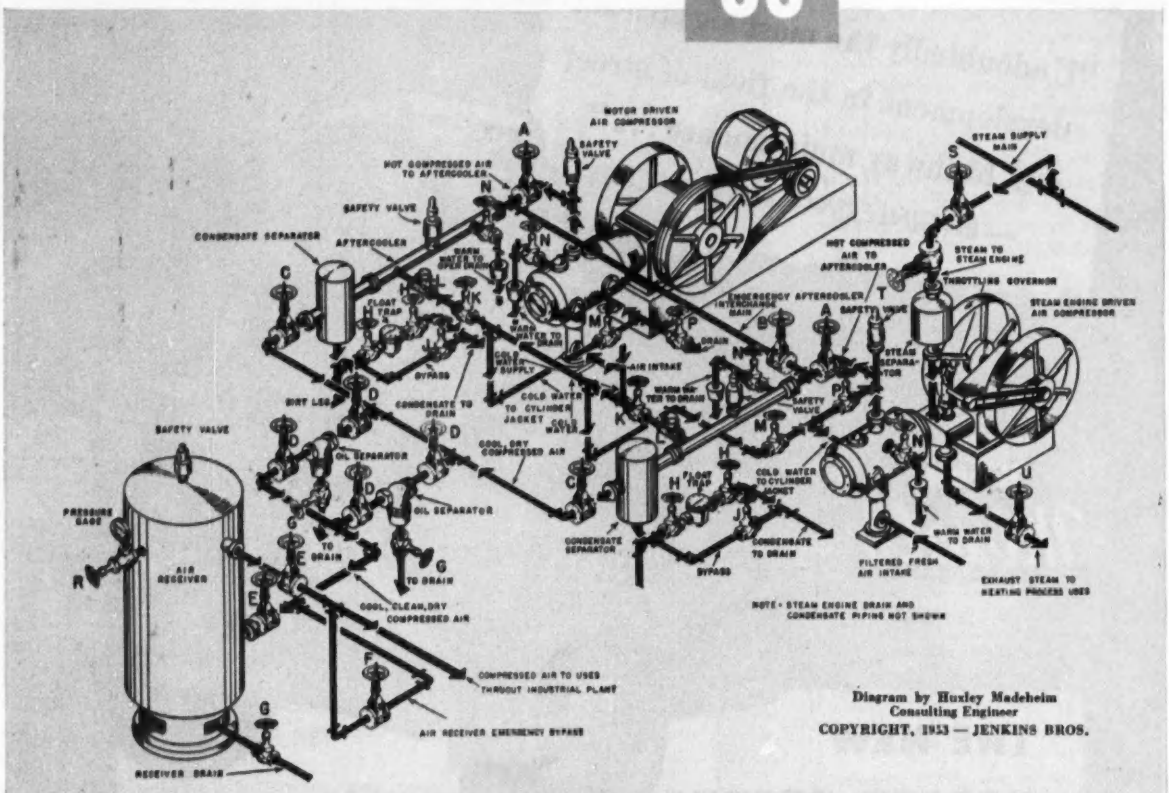

Diagram by Huxley Madeheim
Consulting Engineer
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VALVE RECOMMENDATIONS
Send for details of Jenkins Valves to suit varying conditions.

Code	Quan.	Jenkins Valves	Service
A	2	Fig. 651-A I.B.B.M. Gate	Compression Discharge Shutoff
B	1	Fig. 651-A I.B.B.M. Gate	Emergency Changeover Line
C	2	Fig. 651-A I.B.B.M. Gate	After Cooler Shutoff
D	4	Fig. 651-A I.B.B.M. Gate	Oil Separator Shutoff
E	2	Fig. 651-A I.B.B.M. Gate	Air Receiver Shutoff
F	1	Fig. 651-A I.B.B.M. Gate	Air Receiver Shutoff
G	3	Fig. 106-A Bronze Globe	Drain Line
H	4	Fig. 950 Bronze Globe	Trap Shutoff
J	2	Fig. 950 Bronze Globe	Trap By Pass
K	2	Fig. 106-A Bronze Globe	Cold Water Control
L	2	Fig. 352 Swing Check	Prevent Backflow
M	2	Fig. 106-A Bronze Globe	Cold Water Control
N	4	Fig. 106-A Bronze Globe	Drain Shutoff
P	2	Fig. 106-A Bronze Globe	Drain Shutoff
R	1	Fig. 744-G Needle Angle	Pressure Gage Control
S	1	Fig. 204 I.B.B.M. Gate	Steam Supply Line
T	1	Fig. 923 I.B.B.M. Globe	Steam Engine Shutoff
U	1	Fig. 651-A I.B.B.M. Gate	Engine Exhaust Shutoff

How to plan PIPING CONNECTIONS FOR AN INDUSTRIAL PLANT AIR COMPRESSOR

Compressed air is more economically supplied from a central installation in plants where demand is extensive. In such a system, the highest single pressure requirement in the plant determines the number of compression stages needed, and local pressure reducing stations meet the requirements of specific operations.

A single stage system is shown in this layout. Equipped with electric and steam driven compressors, this installation can develop 125 p.s.i. The former usually serves as a stand-by unit, but both can be used jointly for heavy load conditions.

The compressed air, after leaving the compressors, passes through a water-cooled after-cooler, which lowers air temperature and condenses moisture. The air then goes through oil separators and on into the air receiver, which decreases pressure pulsations and serves as a storage reservoir.

A capacity reduction device helps control load fluctuations in the constant-speed electrically driven compressor. In variable speed steam driven compressors, the throttling governor responds to load changes.

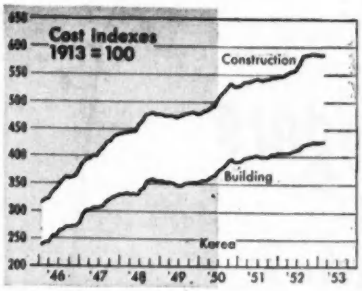
Consultation with accredited piping engineers and contractors is recommended when planning any major piping installation.

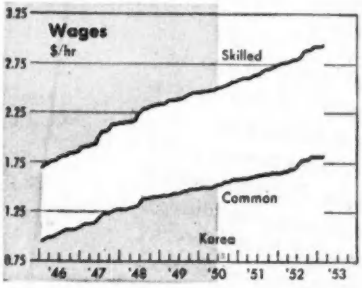
To save time, to simplify planning, to get all the advantages of Jenkins specialized valve engineering experience, select all the valves you need from the complete Jenkins line. It's your best assurance of lowest cost in the long run. Jenkins Bros., 100 Park Ave., New York 17.

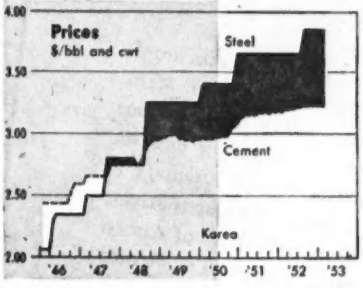
Complete description and enlarged diagram of this layout free on request. Includes additional detailed information. Simply ask for Piping Layout No. 65.

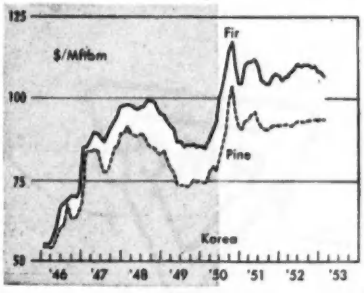
JENKINS
LOOK FOR THE DIAMOND MARK
VALVES
SINCE 1864
JENKINS

FEBRUARY CONSTRUCTION SCOREBOARD







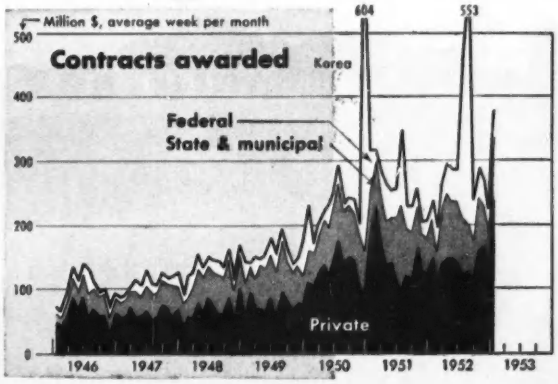


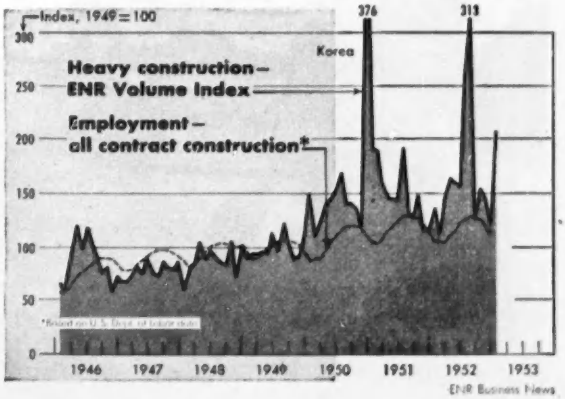
ENR INDEXES (1913 = 100), 20-cities' average	1953 February	% Change from last Month	% Change from last Year
Construction Cost	587.19	−0.01	+ 6.9
Building Cost	425.24	+0.04	+ 4.7
WAGE RATES, 20-cities' average			
Common	$1.817	0.0	+ 9.5
Skilled (aver. 3 trades)	2.946	+0.1	+ 6.7
Bricklayers	3.275	+0.2	+ 6.4
Structural Ironworkers	2.871	+0.1	+ 6.4
Carpenters	2.692	0.0	+ 7.3
MATERIAL PRICES, 20-cities' average			
Cement, bulk, per bbl	$3.222	+0.09	+ 1.4
Structural Steel, (3-mill aver.), per cwt	3.850	0.0	+ 5.5
Sand, per ton	2.134	+0.6	+ 1.4
Lumber, 2x4 Fir, per M. ft. bm	106.875	−0.2	+ 0.3
Lumber, 2x4 Pine, per M. ft. bm	93.500	+0.3	+ 1.9
Common brick, per M	31.606	0.0	+ 1.5
Ready-mixed concrete, per c. y	11.391	+0.02	+ 3.3
Structural Clay Tile, 3x12x12 per M	155.418	+0.6	+ 1.9

CONTRACTS AWARDED (Millions)	1953 Jan.	1952 12-Mos.	% Change from Jan. '52	% Change from 12-Mos. '51
Total U. S. (ENR reported)	$1,886.5	$15,689.2	+57.6	+15.3
Private	1,177.5	7,112.6	+62.8	− 4.4
Public	709.0	8,576.6	+49.6	+39.1
Federal	228.9	4,501.0	+47.7	+100.4
ENR Volume Index, '13 = 100	714	577†	+ 7.3	+10.5
NEW CAPITAL (Millions)				
Total	722.9	15,151.1	+47.8	−10.1
State & Municipal Bond Sales	337.6	3,092.9	+35.0	+24.1
Corporate Security Sales	368.9	3,577.6	+65.8	−12.4
Federal (non-federal work)	16.4	893.8	− 0.6	+21.9
Federal (federal work)	———	7,586.8	———	−20.4

MATERIAL SHIPMENTS & LABOR SUPPLY (Millions)	1952 Nov.(N) Dec.(D)	11-Mos. 12-Mos.	% Change from Mo.	% Change from Yr.-Cum.
Cement bbls, Bu. of Mines	19.771(N)	237.396(11)	+ 9.8	+ 3.4
Fabr. Struc. Steel, tons AISC	.225(D)	2.664(12)	+10.8	− 1.4
Lumber, mil. ft. bm., NLMA	3.001(N)	34.910(11)	− 5.1	− 0.5
Lumber Prod., mil. ft. bm., NLMA	3.029(N)	34.768(11)	− 5.6	− 5.0
Contract Constr. Employ., BLS	2.444(D)	2.543(12)†	− 2.9	− 1.0

† Average.





why "Cross Your Fingers" on subdrainage bids?

There is no reason to "take a chance" when bidding that next subdrainage contract. With Armco Perforated Metal Pipe you can make bids that are both *low and profitable.*

One reason is that handling and installation costs are low. A small, unskilled crew quickly joins long, twenty-foot sections of Armco Pipe to make a continuous conduit that will not pull apart. Light weight makes hauling and handling easy—no special equipment is required. There is no breakage, no waste, no delay.

Experienced contractors know that Armco Corrugated Metal Pipe saves money on all kinds of drainage jobs. Flexible, corrugated metal design assures ample strength without excess weight. In addition to Armco Perforated Pipe there are other types to meet every drainage requirement. Plain galvanized is ideal for normal service conditions. ASBESTOS-BONDED and PAVED-INVERT handle severe corrosion and erosion. Armco Pipe-Arch solves problems of limited headroom.

It is easy to bid low and retain ample profit with Armco Corrugated Metal Drainage Structures. Try them on your next job. Meanwhile write for data on your specific needs. Armco Drainage & Metal Products, Inc., 1653 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

Armco Drainage Structures

ARMCO

THE CONSTRUCTION WEEK

• **Who's got the headquarters?**—Military complications inside the U. S. European Command seem to be snarling establishment of that new central construction authority (ENR Jan. 15, p. 19) that's to manage and supervise construction for all U. S. armed forces in Western Europe.

Even Maj. Gen. George J. Nold, who left Feb. 3 to take command of the new agency doesn't know what the conflicting reports coming out of Europe mean—and won't until he gets overseas.

Here's the trouble: on Jan. 13, EUCOM issued a release at Frankfurt saying that the new construction agency would be located initially at Orleans, France, moved eventually to Paris, and placed directly under Gen. Matthew Ridgeway's headquarters.

Then, on Jan. 22, the U. S. Army announced that a 1,000-man construction agency had already gone to work at Heidelberg, under command of Brig. Gen. Orville E. Walsh, former division engineer, Mediterranean division, Corps of Engineers.

Conclusion: Nold will head the agency, with Walsh as deputy. But when and where is still uncertain.

• **Golden bait**—Australia is preparing to dangle a billion-dollar bait before U. S. contractors—the first $40-million tidbit this spring—on its plans for giant water resources development.

The meal that is to be found behind the bait, is the commonwealth's huge Snowy Mountains scheme (see p. 58 this issue for details) that will produce 2,860,000 kw of hydro capacity. In addition to the power that will be developed, there will be 2,100,000 acre-ft of water available for irrigation.

The tidbit is the 140-mi, 21-ft dia Adaminaby Tunnel, which is due for bids this year.

• **Solid piece**—Building contractors, materials suppliers, labor and realtors might be interested to learn that they have a bigger stake in the home building industry than they may realize.

The industry's construction dollar actually breaks down like this: cost of materials and off-site labor, 45.7%; on-site labor, 29.5%; land, 12.5%; salaries, profits, taxes and overhead, 12.3%.

And those are percentages of activity that's now doing a dollar business in the $10-billion class annually.

• **Air bases working**—Three of those Moroccan air bases that were the center of loud controversy and conflicting congressional reports last year, are now operational—only final facilities remain to be added or completed.

But two other proposed bases are still tied up in a mass of controversy that is concerned with problems involving international politics, real estate, and congressional investigations.

Atlas Constructors are as much tied up as the bases—they're pushing for some answer to the question of whether they can finish their job without having any further lost motion.

• **No merger**—Chances of merging Army civil functions with Interior public works keep fading.

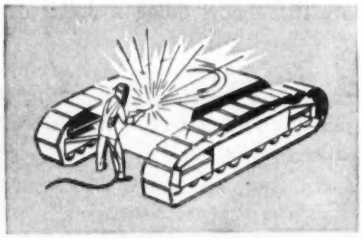
Committees of both houses approved an extension of the government reorganization act that would make it easier for either House or Senate to kill reorganization plans proposed by the President. And observers—well aware of the strong friends both agencies have in both houses—figure the committee actions were keyed in part to blocking any merger move.

Before you buy:

SEE 'EM IN ACTION!

Ahl Bros. Constr. Co., Inc., Branchville, Md. own 5 Link-Belt Speeder draglines and back hoes, report "they're good machines."

Rugged construction, work-speeding features help you keep jobs on schedule, costs in line



More live weight—All-welded construction plus proper weight distribution provides extra strength without dead weight... resists impact and twist... simplifies field service.

WHY are more and more contractors specifying Link-Belt Speeders? Well, take the 30,000-lb. capacity LS-85 for example: It delivers 92 net hp at full load speed, has self-cleaning crawler treads, Independent Boom Hoist, not to mention outstanding stability. It's fast, maneuverable, yet takes the most rugged work with minimum maintenance.

Like the LS-85, every Link-Belt Speeder combines quality construction throughout with advanced design to speed your work, give you more per equipment dollar.

If you'd like details on this complete line of crawler, truck or wheel-mounted shovel-cranes, ask your distributor or write for Catalog 2373.

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BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

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...EVERYWHERE

FEBRUARY 5, 1953

VOL. 150, NO. 6

ENGINEERING NEWS-RECORD

President sets middle course

First message calls for public works as economic safeguard —tax cuts to follow spending reduction

President Eisenhower has pledged a strong federal program for public works and resource development with major projects timed to prime the economic pump whenever recession or depression threatens.

That is the most significant word to the construction industry in the President's State of the Union message to Congress. The program was detailed in some fields but in large measure he asked Congress to await further study both at the White House and on Capitol Hill before putting ideas into legislative language.

As he proposed during his campaign last fall, Eisenhower strongly recommended more state and local participation in the future in major public construction.

He said he believes that there is a better way of planning and paying for big building than by an exclusively federal operation.

The combined effort of Washington, local governments and private citizens and groups will "advance the development of the great river valleys of our nation and the power they can generate," he said. Such participation also can be effective in expansion of upstream water storage, the sound use of public lands and the conservation of minerals and forests.

But there was no doubt that Eisenhower sees in dam construction, road building and other classic pump-priming projects of the New Deal, an important weapon against an economic downturn.

"Vitally important are the water and minerals, public lands and standing timber, forage and wildlife of this country," Eisenhower said. "This calls for a strong federal program in the field of resource development. Its major projects should be timed, where possible, to assist in leveling off peaks and valleys in our economic life. Soundly planned projects already initiated should be carried out. New ones will be planned for the future."

Though he did not say so directly, Eisenhower indicated he is giving thought to reorganizing functions now carried on by the Interior Department and the Army's Corps of Engineers to afford more efficiency in public construction. This hot potato, one that the Hoover Commission picked up with a recommendation that the Engineers and Reclamation be merged, will have to be handled gingerly by Eisenhower if he is not to be burned by Congress.

In his message, he was cautious: "There has been much criticism, some of it apparently justified, of the confusion resulting from overlapping federal activities in this entire field of resource conservation. This matter is being exhaustively studied and appropriate reorganization plans will be developed."

Eisenhower picked up for recommendation most of the programs of the outgoing administration in the social and welfare field. He plumped for extension of social security to include millions now not covered under retirement programs, he recommended aid to education including expansion of construction in defense areas, and civil rights.

He also accepted the outgoing administration's recommendations for extension of rent control, but he advised Congress he would not ask for continuance of price-wage controls, that only military priorities would be used after June 30 on metals, and that the Taft-

Controls end poses construction problem

Price-wage controls will be allowed to dwindle and die between now and their April 30 expiration date. Already price controls are pretty puny and will have little effect on contractors and construction suppliers. But on wages, President Eisenhower's recommendation creates a problem for construction.

Expiration of wage controls will come right at the peak of wage bargaining in construction. Most labor contracts in construction are negotiated in the spring so that wage costs can be determined in advance of the big summer construction season.

This means that next summer's construction wages will be fixed in a free economy without either wage or price controls.

The AFL contract with the Building Trades Employers Association in New York City, covering 125,000 workers, expires in June.

Right now, the Construction Industry Stabilization Commission is without a wage policy. It is meeting only two days a week processing a few applications still coming in asking for approval of wage increases of 15 cents an hour, which CISC has been allowing to cover 1952. It also is beginning to get new applications covering employees who already got the 1952 increases, without any specific general policy to apply, and approving them if they are justified on the basis of inter-area comparisons.

CISC co-chairman Duncan Campbell doesn't think any new construction wage policy should be considered with so short a time left for wage controls.

Eisenhower asked for prompt amendment of the Taft-Hartley act. But he did not specify changes he wants. He said that he, in the White House, and Congress, in committee hearings, should be able to work out a new law. He also promised to run an impartial government as regards labor-management disputes, with these words:

"Government can do a great deal to aid the settlement of labor disputes without allowing itself to be employed as an ally of either side. Its proper role is to encourage the processes of mediation and conciliation. These processes can be directed successfully only by a government free from the taint of any suspicion that is partial or punitive."

Hartley act should only be amended, not repealed.

His own description of what he sees his Administration to be—a middle way between untrammelled freedom of the individual and the demands for the welfare of the whole nation—is underscored in these programs he proposed:

• **School construction**—Legislation aiding construction of schools in defense areas expires June 30, and should be renewed.

• **Social security**—Besides extending social security to people not now covered, including self-employed architects and engineers, Eisenhower encourages extension of privately sponsored pension plans, and government checking of inflation to make the pensions worth their dollar value.

• **Taxes**—Reduction of taxes will be justified only as we show we can succeed in bringing the budget under control. By this, Eisenhower means that this year's scheduled suspension of the excess profits tax, and the relief to individuals scheduled for Jan. 1, 1954, must be deferred until he and Congress can bring spending down to the revenue total. Truman estimated a $9.9-billion deficit for the fiscal year starting July 1. So the money Congress earmarks for spending would have to be cut that much before cutting taxes if it chooses to follow Eisenhower's recommendations.

These cuts can come from military spending, but probably won't. They could come from cutting highway building and civilian construction.

The fact is that neither cuts will be too great, with the result that Congress will either follow Eisenhower and retain high taxes for a while longer, or defy him and cut taxes regardless of the deficit in June, 1954.

• **Housing**—He had no recommendations on how many units of public housing should be provided in this year's appropriations bills. Congress authorized 35,00 units this year. Nor did he have any new recommendations governing the Federal Housing and Home Administration or veterans housing, or operations of the Federal National Mortgage Association.

Eisenhower did say that he would order a thorough study by a special commission of the proper relationship among federal, state and local programs in the whole field of housing. He will ask Congress for authority and money to establish the commission, which will also look into federal activities in health, education and social security.

'Pike makes money

Colorado's Denver-Boulder Turnpike has been rated a financial success during its first full year of operation.

On Jan. 21, the 17.5-mile expressway began its second year with $221,140 on hand—after all bills were paid.

Total revenue for the first year was $380,753, with an average of 4,746 vehicles paying a total of $1,040 daily in tolls. Economic studies had shown that the $6.3-million turnpike had to take in only $828 daily to meet bond requirements between 1952 and 1960.

Water-resources groups set legislative meeting

The nation's leading water-resources organizations will meet in St. Louis this weekend to adopt recommendations for guidance of the 83rd Congress and the Eisenhower Administration in revamping federal reclamation and water laws.

They meet under the sponsorship of the National Water Conservation Conference, which includes reclamation associations, interstate river commissions, the National Rivers and Harbors Congress, the Mississippi Valley Association and similar organizations.

Recommendations of a nine-man committee, which have been studying a national land, water and power policy for the conference, will be reported to a general meeting Wednesday. At that time, the conference is expected to adopt a joint statement of policy to guide member organizations in advising congressional committees and federal officials on revision of federal laws.

Legislative proposals will be concerned with:

• Planning, management and ownership of projects by interstate bodies.

• Maintaining state control over water use.

• Measures enabling state and interstate bodies to acquire ownership of projects that are paying their own way and of other federally financed projects as soon as payments have been completed.

Chairman of the conference's special nine-man committee is James H. Allen of Philadelphia, who is also secretary of the National Water Conservation Conference. Other members of the committee are: Howard T. Critchlow of New Jersey, Orville H. Chinn of Kentucky, Floyd O. Hagie of Bellevue, Wash., Arvin B. Shaw of Los Angeles, John G. Will of Colorado, H. G. Hersey of Iowa, Milton P. Adams of Lansing, Mich. and R. D. Collins of Texas.

The Engineers Joint Council will be represented at the St. Louis meeting by W. W. Horner, chairman of the EJC Water Policy Panel.

State court invalidates Carolina-Virginia road corp.

The North Carolina supreme court has declared unconstitutional the law establishing the Carolina-Virginia Highway Corporation, which was formed to build a toll road along North Carolina's Atlantic shore line from Virginia Beach, Va., to Nags Head, N. C., and to construct a toll bridge across Croatan Sound.

At issue in the test case was the coporation's legal authority over highway matters and the power given it by the 1949 legislature to issue tax-exempt bonds for financing the toll highway and bridge projects.

The court held that the act creating the corporation violated the state constitution on three counts:

• That it conferred legislative powers upon the state's municipal board of control which chartered the highway corporation.

• That a section of the law limiting its application to five counties made it a local act and thus violated a section of the constitution forbidding local laws dealing with bridges and highways.

• That it violated a section of the constitution which says that property of the state or municipal corporations shall be exempt from taxation.

The decision explained that a corporation set up without any form of governmental control "may not be classified as a tax-exempt municipal corporation within the meaning of the constitution."

Mexico changes rule on foreign engineers

Foreign engineers can once again practice their profession in Mexico.

The Mexican Supreme Court has reversed a ban which prohibited foreign members of technical and scientific professions from practicing in Mexico.

Ruling that Article 15 of the law of professions is in contradiction to the Mexican constitution, the court cited Article 4 of the constitution which gives full guarantee of freedom to work to all residents of the country.

The reversal does not mean, however, that any foreign professional can work in Mexico. Foreigners must first get permission from the Mexican government, then their professional degrees must be approved by the National University of Mexico.

Congressional committees start hearings on money bills

Bills concerning work on Missouri River's Oahe Dam, water rights on California river excite interest

Two congressional committees of vital importance—both House and Senate subcommittees dealing with appropriations—began to set up their schedules this week.

On the House side, the Appropriations Subcommittee on Civil Functions began hearings on some money requests; on the Senate side, the Appropriations Civil Functions Subcommittee completed work on its organization.

Meanwhile, congressmen continued to pour new legislation into the hopper—much of it of vital concern to construction men. Two of the more interesting bills—because of their implications—concerned Oahe Dam on the Missouri River (where local residents have been waging a hot fight against construction of the flood-control structure) and the Santa Margarita River in California, where the Navy and local water users are now engaged in a free-for-all contest over water rights.

Other bills of interest included one to establish a private corporation to develop the St. Lawrence Seaway; and another concerning further development of power which is available at Niagara Falls.

• **Appropriations action begun**—On the House side, Chairman Glenn Davis (ENR Jan. 29, p. 21) and his Civil Functions Appropriations Subcommittee began hearings on money requests—the first matters before the group being requests for the Soldiers' Home and for an investigation of the Panama Canal by the General Accounting Office.

Corps of Engineers chiefs are not expected to appear before the committee until Feb. 16, when Maj. Gen. S. D. Sturgis (ENR Nov. 20, 1952, p. 69) will testify on requests for rivers and harbors. Sturgis will be followed on the committee's program by other Corps of Engineers officers to testify on requests which are being made for flood control and military construction.

On the Senate side, Chairman Knowland has not yet scheduled any hearings—slowness of committee organization throughout the Senate having thus far stymied action on bills. Meanwhile, however, Knowland announced other members of his subcommittee: Senators Young, Cordon, Thye, Mundt, Dworshak, Hayden, Russell, Ellender, McClellan and Robertson.

• **Water measures**—In an apparent effort to resolve difficulties over use of water of the Santa Margarita River, near San Diego, H.R. 2260 was introduced by Rep. Engle of California, to authorize the Secretary of Agriculture to "construct, operate and maintain" facilities to provide water for irrigation and domestic use from the river. The works would be jointly used by the Navy and the Department of Interior.

The controversial problem of water supplies from the Santa Margarita (ENR Nov. 6, 1952, p. 19) has embroiled the Navy and local citizens for months. The dispute centers around the Navy's claim that when it acquired a large riverside ranch as site for its huge Camp Pendleton (Marine base) it also acquired prior water rights on the stream. By implication, these rights superseded many private irrigation and domestic water rights that were dated after the old Santa Margarita Ranch rights. A suit to determine this question is now before the U. S. District Court.

The measure concerning Niagara Falls (S. 689) is aimed at preserving the scenic beauty of the falls, but at the same time to authorize construction of improvements at the falls to increase power production.

And, to speed construction at Oahe Dam on the Missouri, H.R. 2233 would provide for acquisition of lands required by the reservoir. Part of the Pick-Sloan plan for the Missouri Basin, the dam has been the center of a hot fight by local residents, who claim its reservoir will flood large areas of valuable farmland, without making an appreciable difference in flood-control effect. South Dakota farmers are arguing for a series of small dams on river tributaries, rather than big Oahe Dam.

• **Other measures**—Other bills introduced during the week included:

H.R. 2142, to authorize the General Services Administration, as an adjunct to the federal public works program, to make loans and grants for construction, remodeling, improvement and extension of school facilities.

H.R. 2220 to provide for closer supervision of costs of constructing irrigation and reclamation projects, and projects in the territories and possessions of the U. S.

S. 589 would establish the St. Lawrence Seaway Development Corp. as a private group (with U. S. government support) to build the U. S. part of the controversial seaway with Canada.

NEWS BRIEFS

• **PRR barge terminal**—Pennsylvania Railroad plans a multi-million-dollar river-barge terminal in Cincinnati's East End. An underground pipeline will connect the terminal with oil storage tanks of 3,000,000 gallon capacity near Lunken Airport. The tanks, assembled in batteries of three or four, will store diesel oil for PRR locomotives.

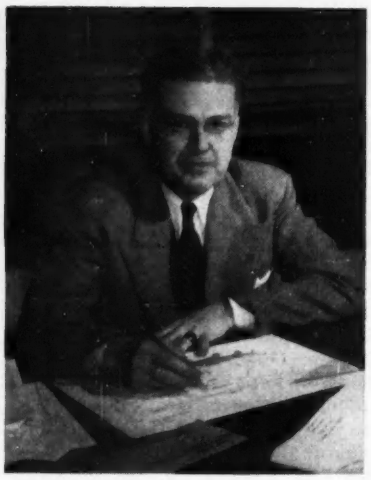
• **Air Force program**—Construction of Air Force reserve training facilities costing $11,685,000 will begin soon at ten bases and municipal airports throughout the country. Funds appropriated at the last Congress have been released to the Army Engineers, who will prepare final plans and award contracts.

• **Bid shopping**—Georgia's state legislature got into the bid-shopping fight with both feet. A committee said it had found "a good many evils" in the industry, and warned that the legislature may act if unethical practices don't stop. One such act might be a law to enforce separate contracts for subwork done by the state.

• **New highways**—Included in Gov. Lodge's message to the Connecticut legislature was a call for about 194 mi of new highways—to be financed out of regular highway revenues in part, and out of tolls, in part. Total cost of the proposed program would be $375 million. No raise in the state's 4-cent gasoline tax is presently anticipated.

• **Highway engineers course**—The Bureau of Public Roads is conducting a three-week course in hydraulics for 23 of its highway engineers who have gone to Washington from all divisions including Alaska. The course, taught by specialists from the hydraulics branch, is the initial step in an in-service training program planned by Robley Winfrey of the bureau's new Training and Education Office.

SECRETARY McKAY moves to fill top Interior post by naming . . .



RALPH A. TUDOR to the job of undersecretary of the department.

Name top consultant to Interior post

Ralph Tudor, California engineer, named Undersecretary of Interior—Reclamation Commissioner still in doubt

Secretary of Interior Douglas McKay's action this week in naming Ralph A. Tudor, San Francisco consulting engineer, as Undersecretary of the Interior brings a well-known civil engineer to a top post in the department for the first time. Tudor is former chief engineer of the San Francisco Bay Toll Crossings Division of the California Department of Highways.

As Tudor's appointment was announced, sources close to the Interior Department reported that McKay had "definitely decided" also to name an assistant secretary of the department to supervise the Water and Power Division—but there was no word as to who was being considered for this job.

An announcement as to the name of the new Commissioner of Reclamation was also expected shortly. At least seven men have been mentioned as possibilities for the post.

• **Army his background**—Interestingly enough, the appointment of Tudor brings to a top Interior post a man who served 23 years as a member of the Army's Corps of Engineers, retiring with the rank of colonel in 1945 (after a recall to active duty during the World War II years).

However, Tudor's construction experience has been very wide in civilian life as well as in service.

A West Point graduate (1923), he served with the Corps until 1929, when he resigned to join the California State Highway Department as an assistant to C. H. Purcell, then state highway engineer. His principal assignment from that year until 1936 was the San Francisco-Oakland Bay Bridge, with which his name is readily associated. When the bridge was completed in 1936, Tudor was selected to set up the first operation.

In 1937, Tudor went with Purcell as assistant administrative officer for the Golden Gate International Exposition, where he had charge of construction and planning of all California buildings and exhibits.

Recalled to active Army duty in 1941, he served during the war in various major posts, including the supervision of completion of Bonneville Dam, and planning of McNary Dam across the Columbia River.

• **In China**—Resigning his commission in 1945, Tudor became a vice-president of Morrison-Knudsen International Co., and in this capacity was chief of a party of 14 specialists who were invited by the Nationalist Chinese government to survey China's communications system—including highways, railways and ports.

He resigned that position in 1947, and joined Clarence A. Seage to form the firm of Seage and Tudor, consulting engineers. He left this association in 1948, to rejoin the California Highway department to head its Division of Toll Crossings—again under his old employer C. H. Purcell—who was then the state's director of public works. Subsequently Mr. Tudor again set up his own office in San Francisco.

• **Another M-K man considered**—Incidentally, observers said that a second Morrison-Knudsen official had also been under serious consideration for a big Interior Department post. It was reported that McKay had made serious overtures to Lyman Wilbur, now resident partner in Atlas Constructors on the construction of air bases in French Morocco. The Secretary wanted Wilbur to become administrator of the Bonneville Power Administration. It was reported that Morrison-Knudsen had asked McKay to drop his plans, because of Wilbur's importance on the African work.

Pollution on the increase in Tennessee River system

Pollution in the Tennessee River system is increasing.

The Tennessee Valley Authority's Director of Health, Dr. O. M. Derryberry, in a report just issued by TVA said that although many parts of the system have water of good quality, pollution increased by at least 35% between 1941 and 1951. According to the official, without continued vigorous action on the part of state regulatory agencies, there is little indication that the trend will reverse, for population in the valley is on the increase and industry is growing at a steady pace.

The report cited ten large sources of pollution and several smaller ones. Expenditures of almost $25 million would be necessary to correct conditions caused by the largest ten sources. The U. S. Public Health Service estimate for an abatement plan covering the entire valley is between $47 million and $57 million.

Of the 10 sources cited, Chattanooga and Knoxville now create the largest problems in public health. Both now discharge untreated sewage into the river although both cities are planning corrective measures.

Four pulp and paper mills, three rayon plants and one chemical plant are the other eight major pollution sources.

Because the offending cities and industries have not taken responsibility for abatement measures, Derryberry urges federal, state and local agencies to combine in development of a comprehensive action to stem pollution.

"An aroused local public interest, coupled with willingness to take the initiative in bringing about correction, will prevent stream pollution abatement from lagging behind in areas of expanding urbanization or industrialization," he said.

Copies of the TVA report may be obtained without charge from the authority's division of health and safety in Chattanooga.

Cost, benefit standards spelled out for water resource development

Republicans expected to accept regulations, designed to bolster congressional controls on construction

The new regulations that detail the way in which costs and benefits of water-resource development projects are to be computed (ENR Jan. 22, p. 19) were available last week.

Embodied in Bureau of the Budget Circular A-47, the regulations were issued just as the year 1952 closed, but most Washington observers were convinced that the new administration will accept them virtually as issued. The regulations obviously are part of a general drive by Congress to regain and keep close control of expenditures by various governmental construction agencies (ENR Jan. 29, p. 24).

The ruling was sent to the Departments of Agriculture, Army, Commerce, Interior and State, and to the Federal Power Commission, Federal Security Administration and the Tennessee Valley Authority.

The orders apply to "programs or projects for the conservation, development, or use of water and related land resources . . . and to any budget estimate to initiate construction of a program or project." They do not apply to estimates for electric transmission lines or to "steam-electric generating plants required in connection with water resources projects."

The circular containing the new regulations includes this statement:

"This circular shall not be regarded as requiring an agency to submit a report which is contrary to its views. However, any report which varies from the standards and procedures set forth herein because of agency policies shall be accompanied by a statement of the reasons for the variations."

• **Benefits and costs**—The new regulations define what are to be considered primary and secondary benefits, also what costs are to be included in determining the "economic costs," "financial costs" and "construction costs" of each project. Each report must include complete estimates of all benefits and of the economic costs. These must be compared in monetary terms wherever possible.

Reports on economic costs must include such factors as displacement of people, resulting decreases in the value of lands or minerals, cost of rectifying unfavorable effects on sanitation or highways, business losses and losses in local tax revenues.

• **Repayment periods**—Rates for services are to be set so that repayment of the initial federal investment can be accomplished within the "useful economic life of the project, but not longer than 50 years." The same period is used in computing costs.

Repayment periods for reclamation projects may be less than 50 years with an additional development period of ten years.

"Pending enactment of general legislation dealing with the use of the interest component to show assistance in retirement of construction costs allocated to irrigation," the regulations set up criteria to be observed. One of these states that "where the cost allocated to irrigation is in excess of the sum of anticipated repayments by water users and other identifiable irrigation beneficiaries, and any net revenue of any separable purposes of the project, the project report shall identify these excess costs and may propose that they be borne by the federal government as a subsidy to irrigation."

Net revenues from other parts of the project, such as power development, may be used to help repay irrigation costs.

• **Flood-control projects**—All methods for preventing or reducing flood damage must be considered by the agency proposing any flood-control project. These must include such possibilities as relocation of flood-plain developments and zoning of flood plains, sedimentation and runoff control, storage of water on cultivated fields of watershed lands, and levee or flood-wall construction.

As a guide in proposing alternate methods, the regulations state, the cost to the federal government for a proposed method should not be greater than for an alternative method producing similar benefits.

In his letter transmitting these new regulations to the federal agencies, Frederick J. Lawton, former Director of the Budget, said that they are the outgrowth of more than two years of review of water resource policy, in which the findings of the President's Water Resources Policy Commission were of value.

DPA uneasy about steel capacity

Expresses concern over possible shortage of facilities for producing finished steel in future emergency

Although steel mills are nearing the peak of a vast program to increase their production capacities, the nation's defense agencies showed worry last week lest not enough new facilities have been added to turn the steel ingots into usable form.

Releasing the results of the first part of a three-part survey of the country's capacity to fill demand for critical steel types in the event of all-out mobilization, the Defense Production Administration commented that under "maximum conditions" enough finished steel probably could be produced, for the moment. But whether an increase in demand for certain steels could be met on a continuing basis remains to be seen, DPA said.

• **General rise**—However, the general tone of the DPA report was more than encouraging. It showed:

By the end of 1953, basic ingot capacity will have increased by 25% above pre-Korea levels, and 38% over World War II's highest production rate. Total ingot production capacity, by the end of the year, will be in the neighborhood of 124,000,000 tons.

At the same time, the steel mills will be geared to produce 9,500,000 tons of structural shapes (including wide-flange beams and bearing piles) annually. That compares with net shipments of 4,500,000 tons in 1950.

• **How much more?**—"Nevertheless," DPA said, "war production sharply increases the demand for certain steel products. Therefore, it is essential to see whether the expansion program will have put the iron and steel industry into a position where it can obtain critical types of steel products in the quantities likely to be needed."

The remaining two parts of DPA's survey are expected to show detailed military and essential civilian requirements for the eight most critical steel products, and point up any existing deficiencies in steel finishing facilities when the expansion program is over.

What worries DPA was this: Of the $4.6-billion worth of fast tax writeoffs certified to steel companies, 72.9% has gone into basic steel plant and raw material expansion, only 27.1% into finishing facilities. And of this percentage, .7% ($34.8 million) has gone into structural shape and piling facilities, .5% ($23.2 million) plate finishing.

Variety of highway problems assails state legislatures in new year

Everything from appropriations for highway flood damage to arguments on the necessity of highway commissions has hit legislative chambers right at the start this year.

• **Highway commissions?**—A bill to establish a seven-member state highway commission is one of the major pieces of legislation before the Nebraska legislature. Such a commission would coordinate highway systems and construction. Its establishment is favored by farm groups and most of the trucking industry in the state. Opposition comes primarily from state engineering societies and a legislative council committee created to study the state's highway problems. Karl Vogel, chairman of the council, summed up opposition this way: "Put a competent man in charge of the highway department and let him run it in the way successful American businessmen operate. . . . There is too much rule by commissions, which is merely a way to dodge responsibility."

• **Tolls proposed**—A bill was introduced into the Arkansas state legislature to authorize a $50-million issue of revenue bonds for vehicular toll facilities, and at the same time a resolution was proposed asking for study of toll road possibilities by the legislative council. The bill would authorize specifically a $15-million issue of bonds for the construction of a third bridge across the Arkansas River at Little Rock, with the bonds to be secured by tolls.

Under a bill introduced in the Connecticut legislature the state's gasoline tax would be increased in order to double state grants to townships for highway building. Meanwhile, in North Dakota a legislative research committee decided not to introduce a bill this year that would turn over to county maintenance some 2,400 mi of secondary state highways because certain counties could not take on the added responsibility.

• **January floods**—Two days of heavy rains in northern California raised practically every river and stream on the north coast over their banks and caused highway damage which will run to some $2 million. State engineer George McCoy said that highway damage may go over his estimate because of the possibility of earth slides. The $2-million figure does not include county roads. Governor Warren proclaimed a state of emergency in Humboldt and Del Norte counties, and it was indicated that special financial aid will be asked of the legislature when it convenes this month.

• **Immediate funds needed**—Governor Frank Lausche of Ohio asked the state legislature this week for $12 million to finance the state's highway program during the early part of 1953. Need for the money arose from the fact that only $6.5 million will be available before June 30 out of some $16 million already earmarked for the highway department.

The state wants to get started on a number of projects as soon as there is a break in the weather, and the funds advanced, the governor said, would be used for projects already started but uncompleted. This work includes major highways in the Pike County atomic plant area, access highways to the new Ohio Turnpike, and express highways in Akron, Toledo, Cincinnati and Cleveland.

• **Court makes decision**—Montgomery County, Ill., believes that the state legislature has abrogated too much power to itself in the case of the Illinois Freeway Act of 1943. The county court declared the act unconstitutional and dismissed a request by the State Department of Public Works for condemnation proceedings under the act. However, the Illinois Supreme Court has upheld the act, which authorizes state control over areas bordering on highways. Under this law, motels, gasoline stations, roadside stands and other enterprises are prohibited from constructing driveways connecting with a freeway.

• **$568 million plus**—If the Maryland State Roads Commission has its way, the general assembly will do something about the over-all 12-year road construction program submitted to it by the commission. The over-a-half-a-billion-dollar plan in careful and minute detail shows that the road commission recommends improvements equivalent to three-fourths of the present 4,736,000 mi of state highways. The plan would be financed by bond issue, a cent increase in gasoline tax, and a $5 increase in auto registration.

Kentucky freezes building funds

With $36 million in capital-outlay requests on its hands, the Kentucky State Property and Building Commission last week froze state funds until it can determine whether the 1952-53 budget can be balanced.

The commission started its fiscal year last July with $13.9 million to spend. On Jan. 1, capital-outlay requests received by the commission from state agencies totaled $45 million.

The building-fund freeze is part of a general economy program started by the governor and other state officials when it became apparent that state income, though the highest in history, fell far below estimates on which the budget is based.

Already allotted by the building commission and in process of being spent are contracts totaling $2.9 million; another $6 million was earmarked for expenditure before the freeze.

Of the remaining funds, $4 million is being held in reserve against the possibility of a budget deficit and the $730,498 balance has been frozen except for possible emergency projects.

W. T. Judy, executive director of the building commission, has been directed to investigate the $36 million in requests pending and to set up a priority schedule to be followed in processing them.

12 sanitary engineers guard troops' health

Health and fighting strength of United States and other United Nations forces in Korea rest largely in the hands of a dozen men. Twelve sanitary engineers, officers in the Army's Medical Service Corps now assigned to major commands, are active in all phases of environmental sanitation on the Korean peninsula.

Success of their relentless attack against transmission of disease is a matter of record, said Lt. Col. Stanley Weidenkopf, addressing the New York Sewage & Industrial Wastes Association in New York City last week. Colonel Weidenkopf, now with the Surgeon General's office, served with the Army's Tenth Corps from the Inchon invasion in 1950 until his return to the states some months ago.

In today's stabilized military situation U. S. sanitary engineers in Korea make constant check on water issued to the troops, sending samples to Japan for regular laboratory analyses. (Chlorine residual requirement of 1 ppm early in the war has been boosted all the way to 5 ppm.)

Army Engineer water points with their 50-gpm diatomite units get constant inspection. All local water supplies are surveyed for damage, repaired and put to use if possible, with rechlorination to meet the higher Army standard.

Flood-control plan at Bagnell Dam meets opposition from FPC

Formal complaints of sizable flood damage in the Osage River Basin of Missouri have led to proposals that the Federal Power Commission change substantially its 1947 flood regulations at Bagnell Dam. The Cole County Farm Bureau Inc., of Jefferson City, Mo., has urged provision of more flood storage at the power facility. The dam is operated by the Union Electric Co. under FPC license.

The Farm Bureau proposal for more flood storage has resulted in an unfavorable report by FPC to Congress. An appreciable cut in power output and little effect on flood below the dam would result, the commission said.

Built in 1931, the 140-ft high Bagnell hydroelectric development was designed as a power project, with no provision for flood storage.

During the record flood of May, 1943, the Farm Bureau's proposal, FPC points out, would have resulted in a reduction of only about 2 ft from the maximum natural flood stage at the Bagnell gage, three miles below the dam. An order issued in 1947 specifies that flood conditions that would occur naturally, were there no dam at Bagnell, determine practice for increasing both the discharge and the rate of discharge at flood conditions.

But the opinion has arisen among critics that the operation of the project has caused flood waters to go down the river faster, to rise faster and higher, and to occur more often. Union Electric has been cleared by the commission because of its careful observance of 1947 regulations, which result in flood discharges following closely the flows that would occur under natural conditions.

• **FPC solution**—The power storage space at Bagnell is equivalent to the natural flood storage in the valley eliminated by the dam, according to the FPC report. Of 19 floods in excess of 50,000 cfs at Bagnell Dam between 1932 and 1944, five increased the maximum stage at the Bagnell gage, two did not affect the stage, and 12 actually showed a decrease from what would have occurred under natural conditions. The commission says that the five that showed an increase occurred before adoption of the present rule of operation.

During the first major flood after the 1947 operation regulations—that of July, 1948—the maximum inflow into the reservoir was about 155,000 cfs while the controlled outflow reached a maximum of 107,000 cfs. In July, 1951, a maximum of 137,000 cfs was reached over a period of 14 days.

The commission believes that the only realistic solution of the flood problem in the Osage River lies in the provision of flood control storage upstream from the Bagnell project. This would consist of nine reservoirs controlling about 75% of the Osage River drainage area, and two local protection works.

Washington PUD hits snags on Priest River Dam

Two strong opponents last week were lined up to fight the Grant County, Wash., Public Utility District's plan for construction of a $412-million dam across the Columbia River at Priest Rapids.

The Corps of Engineers, whose project to dam the river at Priest Rapids antedates the PUD proposal, has already announced its opposition to the new dam. The Atomic Energy Commission has now added its objection, on the ground that the new dam would be a potential source of danger to its Hanford Works, downstream.

Glen Smothers, PUD manager, and Axel Strom, industrial utilization director, plan to ask Congress to set aside the authorization previously granted the Corps for the project. What they can do about the AEC objections remains to be seen.

AEC is reported to believe that the dam could be reduced to rubble in an instant under an atomic attack, releasing a wall of water more than 150 ft deep if present plans for the dam are adopted. Such a flood would inundate Hanford plutonium piles so rapidly that a shutdown could not be accomplished in time to avoid catastrophe.

FIRST COMMERCIAL USE of the highway across Montana's Hungry Horse Dam has been the hauling of logs cleared from the right-of-way for the 47-mi forest service road under construction on the west side of the new Bureau of Reclamation reservoir. When the road is finished this year, it will open up an area capable of producing more than 20,000,000 fbm yearly.

Penna. asks court to back pollution law

Lawsuit seeks clarification of state's right to force subdivision to build anti-pollution works

A lawsuit that many observers called of paramount importance to Pennsylvania's enforcement of its clean-streams law has been filed by the state against the borough of Bridgeport and North Versailles Township, in Allegheny County, which were cited recently as the first two Pennsylvania municipalities to face court action over stream pollution (ENR Jan. 8, p. 50).

On the outcome of the legal action—filed at Norristown, Montgomery County—will depend whether the state is legally empowered to compel a political subdivision to construct a sewage disposal plan that could prevent further stream pollution.

• **Cites failure**—Brought by Attorney General Robert B. Woodside, the mandamus action is brought against officials of the Bridgeport Borough Council.

It states that in 1944, the Pennsylvania Sanitary Water Board directed the borough to submit plans for a sewage disposal plant. This was done, and the state claims that it directed the borough to proceed with its plans and have the plant in operation by July 1, 1950.

But in July, 1951, borough officials were hailed before the sanitary board to explain why the project had not been completed. On the plea that the local government was financially unable to proceed, a six-month extension was requested, but denied.

The state now asks the court to compel the borough "to abate its discharge of inadequately treated sewage into the Schuylkill River by constructing a complete sewage disposal plant."

• **Vote for test**—The Bridgeport officials, meanwhile, voted unanimously for making a test case of the state's effort to force construction of the plant.

Morris Gerber, borough solicitor, filed preliminary objections to the action Jan. 28. He said rejection by voters of a proposed $108,000 bond issue made it impossible for the borough to comply with the order. He pointed out that Bridgeport already has a bonded debt of $124,000, and is not able to finance the proposed plant.

Gerber based another part of his brief on a legal technicality—claim that the state's action against borough officials is legally defective in that it does not specify what act or duty the officials failed to carry out.

Observers said that if the state action is successful, it will probably be followed by similar action against other recalcitrant communities. If it fails, legislative action to give stronger enforcement powers will be called for.

See 2-3 years more work on U. S. bases in France

Two to three years may be required to complete the $1-billion U.S. military communications and supply system in France, Maj. Gen. Samuel D. Sturgis, new Army Chief of Engineers, said this week.

Gen. Sturgis—now acting chief of the Corps pending his confirmation by the Senate—said at a news conference that only about 20% of the work on the chain of supply bases has so far been awarded. The rest, he said, will be put under contract with French contractors as soon as international red tape can be unraveled.

Still to be started, too, is the big bulk of construction on U.S. airbases that will cost between $550 and $600 million.

The new head of Army construction forces commented that, despite "understandable language and procedural" difficulties, his Engineers have made commendable progress in getting work under way that is needed to support U.S. forces in Europe. He said that work is planned on 80 major and 50 minor installations in the new supply system extending from French ports to U.S. forces in West Germany.

Change tactics in fight over bid-shopping laws

Massachusetts general and subcontractor groups have a new basis on which to continue waging their controversy over the state's "anti-bid-shopping" laws when legislative hearings open next month.

The Associated Independent Subcontractors have softened their earlier demands for complete separation of mechanical and specialty contracts from the general contract (ENR Oct. 30, p. 24). AIS instead will sponsor a bill that:

• Authorize awarding authorities, on advice of the designer, to call for filed sub-bids on specialty trades (plumbing, heating, electric, painting, plastering, tile and roofing).

• Requires selection of the general contractor on the basis of the low bid for Item 1 (his own) work.

• Empowers awarding authorities to designate responsible low sub-bidders, against whose standing competence the general contractor makes no objection.

• Requires selected sub-bidders to make contracts with the general under whose supervision they would work.

In contrast, members of the Associated General Contractors have called for legislation that:

• Authorizes an award to the low bidding general contractor for the complete work before the opening of the sub-bids.

• Forbids the substitution of low sub-bidders without the consent of the general contractor who is receiving the award.

AIS spokesmen contend their "middle-of-the-road" proposal is aimed at establishing clear-cut authority for designating low sub-bidders but at the same time gives the subcontractors "back to the general under whom they work." General contractor representatives, however, argue that the plan would interfere with their "central responsibility," increase red tape and cause delays.

Waters of Sabine River may be split by pact

The states of Texas and Louisiana, and the federal government have signed a compact to divide the waters of Sabine River between the two states. The compact will not be effective until approved by the state legislatures and Congress.

It would give to Texas all of the water in the river above Logansport, where it becomes the state boundary, with the exception of a required 36-cfs minimum flow. From Logansport to the Gulf the water is to be divided equally.

Each state has the right to use or impound for use all water in the river or its tributaries that lies entirely within its boundaries.

Evaporation studied

Evaporation causes loss of up to nine in. of water per month from large lakes and reservoirs, according to results of a 16-month government research project conducted at Lake Hener near Oklahoma City.

A report on the survey, in which scientists of the Navy, Interior and Commerce Departments participated, can be obtained by writing to the Chief of Distribution, U. S. Geological Survey, Washington 25, D. C.

Map reorganization of disputes board

Change appears aimed at bringing Electrical Workers back to participation in Joint Board

The AFL Building Trades Council concluded its mid-winter conference in Miami Beach last week after hammering out a formula that would give the Joint Board for Jurisdictional Disputes both muscle and teeth.

The council agreed to reorganization of the board (ENR Sept. 18, 1952, p. 43) with four regular members and four alternates and to a policy of disqualifying a regular member if there should be a dispute in which his union or company is involved. In such cases, his place would be taken by one of the alternates for action on that particular case.

Council President Richard J. Gray said that while the council is in agreement on the new formula, it will have to be ratified by the individual unions and by the contractors. He added that it probably would be mid-March before action all around could be accomplished.

While he appeared optimistic that the construction trade unions would accept the formula, Gray would not predict the outcome. And he would not comment on whether the change would bring the International Brotherhood of Electrical Workers back to the Joint Board.

RICHARD J. GRAY, president of the Building Trades Council.

• **Await AGC meet**—Gray's reference to a mid-March deadline for action probably ties into the fact that the Associated General Contractors executive council meets in Miami Beach in early March during the AGC national convention.

J. D. Marshall of Washington, D.C., assistant managing director of AGC, was at Miami Beach during the council meeting as were William E. Dunn and Edward T. Kelly, other members of the AGC Washington staff, Archer Wells of Chicago and R. J. Mitchell of Pittsburgh.

Marshall would not comment, except to say that the plan would have to go before the AGC.

Gray said the council was pleased over the results that had come from the council's order last year banning picketing in jurisdictional strikes.

"It has worked very well and served a good purpose," he added.

Asked about Senator Taft's apparent change of attitude about giving construction unions the right to organize in states that forbid closed-shop contracts, Gray replied:

"I repeat what I have said before, that Bob Taft's attitude toward labor is probably more misunderstood than that of any man in public office.

"And when I say misunderstood, I mean misunderstood by labor. You can't get to understand a man and work with him by standing off and calling him names.

"Speaking as an individual citizen, I believe it is possible for labor to get together with Taft and iron out most of our major differences."

Gray, AFL president George Meany and AFL counsel J. Albert Woll met with Senator Taft in Washington in December to discuss changes in the Taft-Hartley law.

California legislators map labor-control law

An unusually large number of bills aimed at correcting "labor-union abuses" face the California legislature. They were introduced during the January recess and are to be considered by the lawmakers when they return to the capitol Feb. 24.

Taking the lead in promoting labor control legislation was Assemblyman Harold K. Levering, Los Angeles County Republican, who said he considered the November election result "a mandate from the people to stop ruthless activities by some of our labor leaders." The California legislature's membership is heavily Republican.

Levering, who was named Republican floor leader in the assembly, proposed measures to ban the closed shop; prevent labor unions from forcing college or other students to join a union, and to establish a compulsory open shop for all employment.

Assemblyman Marvin Sherwin of Piedmont, a lawyer and Republican leader, introduced a bill to outlaw the closed shop.

State Senator George J. Hatfield, Republican, of Newman, is sponsor of a bill to make secondary boycotts illegal.

While the legislators have indicated much interest in writing into law strong curbs against labor-union activities, Gov. Earl Warren is not in favor of any legislation which would stir up management-labor disputes. He said labor and management have worked in harmony in California and expressed the belief no measures are needed to continue close cooperation between the two factions.

While political observers in Sacramento believe the legislature will pass some type of a labor-control program, there is little indication that enough strength could be mustered to pass any of the bills over a governor's veto. A two-thirds vote would be needed to do that.

More building, jobs foreseen in '53

New construction projects in 1953 will make available more than 2,400,000 full-time site jobs, the U.S. Bureau of Labor Statistics estimated last week.

This is slightly more than estimated monthly averages indicated for 1952, but well over a quarter of a million below the record high of 1950.

Site requirements for August, expected to be the peak construction month of 1953, probably will run from 350,000 to 400,000 greater than the average for the year.

Two out of three of the jobs are for skilled trades. About another third will be helpers and laborers. The remaining few will be non-manual.

According to BLS, demand will continue great for carpentry and bricklaying with carpenters expected to account for over two-fifths of the skilled labor needs and bricklayers about a tenth. Equipment operators and painters will be next in importance.

First work stoppage hits Ohio A-plant in rash of strikes at AEC projects

Electrical workers strike in protest to WSB ruling on travel pay allowance from Portsmouth to plant site

Sixty electrical workers walked off their jobs on the Pike County, Ohio, atomic energy plant last week in the first strike to hit the AEC's $2-billion project.

Employees of the Gustav Hirsch Organization, Inc., Columbus, struck in protest over a Wage Stabilization Board ruling which allows all union employees—except electrical workers—travel pay between Portsmouth and the plant site. The Columbus men are members of the International Brotherhood of Electrical Workers (AFL).

Milton Staub, general manager of the Hirsch firm, said workers in some 16 other trades involved were granted a wage differential to cover the 22-mi trip.

Both the company and union were agreed that the travel allowance should be granted the electrical workers, and representatives of both have appealed the WSB ruling. Staub said he believed the apparent discrimination stemmed from misinformation or oversight on the part of the wage board.

Company officials have urged the workers to return to their jobs while the WSB appeal is pending, promising that if the travel allowance is granted, it will be made retroactive.

AEC's entire construction operation has been affected by the walkout because other union workers respect the picket line.

The Hirsch firm's contract includes all electrical work on temporary construction, power lines and substations at the new plant.

Meanwhile, other A-plant projects have been having labor difficulties.

• **Paducah**—After a short-lived strike, the AFL teamsters ended a walkout at the Paducah A-plant.

The one-day strike started as a result of a dispute over the organization of time checkers and other clerical workers.

The union is in dispute with both F. H. McGraw Co., prime contractor and W. M. Kellogg Co., piping contractor.

McGraw is fighting the union on organization of time checkers on the grounds that the function of time checkers is to keep a check for management on union workers. If the time checkers join the union they will be of no use to the company, McGraw contends.

The union is also trying to organize stock clerks and material checkers of the Kellogg company. Kellogg spokesmen say that the company doesn't object to organization of the material checkers, but it does object to organization of stock clerks.

• **Oak Ridge**—Work on an addition to the gaseous diffusion plant at Oak Ridge, Tenn., was slowed last week by a two-day walkout of 300 AFL operating engineers.

Atomic Energy Commission spokesmen said that the dispute had apparently arisen over engineers objecting to the contractor, Maxon Construction Co., using automatic pumps for water supply.

• **Hanford**—A Kaiser Engineering Co. spokesman said that 100 AFL pipefitters are on strike at the Hanford atomic project near Highland, Wash. The strike started last week apparently in protest against riding on buses carrying workers of other crafts, the spokesman said.

Taft's amendments

Last week Senator Taft introduced amendments to lift some of the restrictions of the Taft-Hartley act from the building trades (ENR Jan. 29, p. 25).

Among the 16 amendments to T-H were some aimed at bringing the law into closer conformity with existing practices in the building and construction trades. These proposals apply specifically to the building trades and would legalize practices that have been going on in the industry for years. The practices were widespread even when they apparently ran counter to the present provisions of Taft-Hartley.

Here are the changes he introduced:

• Building trades unions and employers would be allowed to sign contracts before employees were hired and before a representation election was held.

• In union shop agreements—in states permitting union shops—in the building trades, employees would be required to join the union within seven days after hiring instead of the present 30 days.

The main reason for allowing construction this "peculiar" status is the nature of the industry. Because workers are constantly shifting from job to job, the National Labor Relations Board has found it impossible to hold representation elections on construction projects.

Five union members convicted of conspiracy

Five members of Local 542, International Union of Operating Engineers, AFL, of Philadelphia, Pa., have been convicted by a Delaware County jury of conspiracy and inciting to riot.

The incident took place at Media, Pa., during the recent long-drawn out strike by the operating engineers. More than $100 million in construction projects were halted during the strike (ENR Aug. 28, 1952, p. 29).

The five, police testified, were arrested on July 28 after an attack on workmen demolishing the old Delaware County jail. The demolition work was being done by Gleba Bros., contractors, West Conshohocken, Pa.

Joseph Gleba, of the contracting firm, injured in the fray, said the attack apparently resulted because the firm employed non-union workers.

The five, it was testified, were among five or six carloads of men who drew up in front of the jail before the fight started.

About $4,000 worth of damage was done, the court was told.

Jurisdictional strike brings ultimatum to return

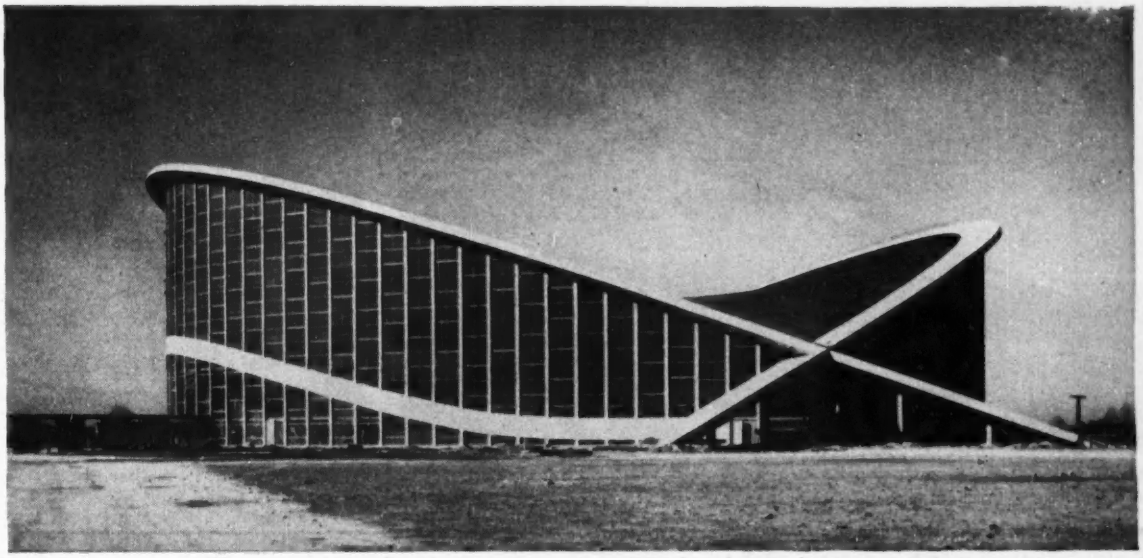
A construction contractor on the Radford, Va., Arsenal rehabilitation project was ready last week to start looking for replacements in case striking carpenters failed to heed an ultimatum to return to work.

The Corps of Engineers directed the J. A. Jones Construction Co. to begin hiring new men if the 500 strikers failed to end their walkout.

The carpenters left the job last week in a new protest over the contractor's decision to use both ironworkers and carpenters in installing radiator guard brackets in the arsenal.

They had ended a week-long strike over the same dispute early this month on condition that the job be delayed until a settlement could be reached.

The contractor has said that international AFL officials have confirmed his decision to split the installation between the two crafts.



LIVESTOCK JUDGING PAVILION at Raleigh, N. C., has a new type of roof framing—saddle-shape roof hung from a pair of opposing concrete arches that encircle the 300-ft dia building. (Lewis P. Watson photos)

Curved roof on cables spans big arena

Frederick S. Merritt
Associate Editor

UNTIL THE NOVELTY wears off, more people will travel to the livestock judging pavilion at Raleigh, N. C., to inspect the building than to see the cattle. For, though the curved structure is just being completed, its unusual design already has earned for it an international reputation.

The pavilion is roughly 300 ft in diameter, and within the huge space thus provided there is not a single column to support the roof. As a result, there is an unobstructed view of the judging floor from any seat in the stands.

This ideal seating arrangement is made possible by the unique long-span roof (ENR Oct. 2, 1952, p. 33). The metal roof deck spanning the 300-ft gap between the curved sidewalls of the building is carried on steel cables.

• **Arches support cable roof**—What is even more novel—and principally responsible for attracting world-wide attention to this structure—is the method of supporting the cables. They are anchored to a pair of parabolic, reinforced concrete arches that spring upward and outward in opposite directions from two common abutments on opposite sides of the building. The arch axes lie in planes that make an angle of about 22 deg with the horizontal. The abutments that support the arch ribs are shaped like an inverted V, the legs of which are extensions of the ribs.

The arches and their abutments are designed to transmit to the ground only the roof load. Their dead weight is carried by vertical steel columns, which are spaced about 8 ft apart along the center line of the arch ribs. These columns also serve as mullions. The glass exterior of the building is framed between them.

• **Seating capacity and costs**—This unusual structure is located on the North Carolina State Fair Grounds. It is intended to serve as a year 'round center for a wide variety of exhibitions, trade shows and conventions. It also may be used for rodeos, horse shows and circuses.

The arena, or judging floor, in the middle of the building, is large enough for a standard horse show. Elliptical in shape, it is 221 ft long by 127 ft wide.

Surrounding the arena are concrete stands. They will seat 5,424 persons, of whom 656 will be in box seats. Also, for a stage-type event, about 4,000 portable seats can be installed on the judging floor.

Total estimated cost of the building is $1,600,000 ($0.43 per cu ft, or $16.21 per sq ft), exclusive of land and portable seats. Of this amount, $1,185,000 is included in the general contract, $47,600 in the plumbing contract, $76,700 in the electric contract, $25,300 in sewer and water pipe contracts, $60,000 in contracts for a boiler and related equipment, and $81,300 in a heating contract.

(The structure is heated with warm air distributed through metal ducts and discharged at the glass exterior.)

• **Problems solved ingeniously**—The concept on which the design is based is simple: The designers wanted a long-span roof in order to eliminate interior columns.

To keep the costs of the required structural framework low, they sought and found a design in which structural materials are used to their best advantage. They supported the roof on steel in tension, employing bridge strands capable of being stressed safely to more than 100,000 psi, and concrete in compression, in the form of two opposing parabolic arches. These arches lean backward against the cable tension like a man pulling on a rope, eliminating the need for anchoring guys and deadmen.

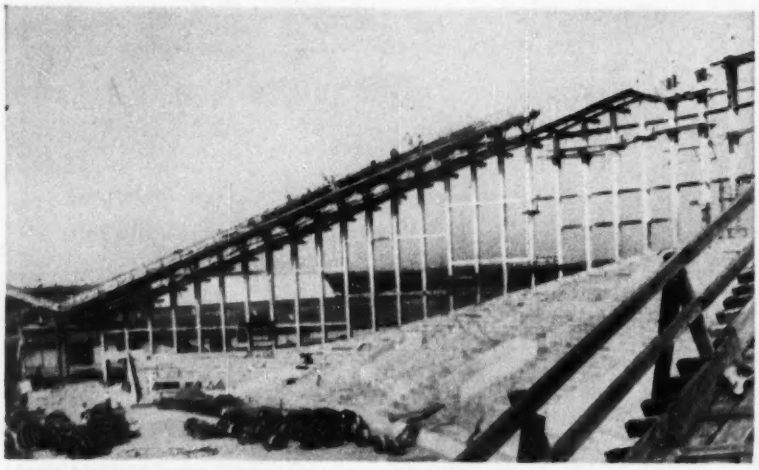
According to consulting engineer Fred Severud, "It is the elimination of the counterweight, which is expensive and adds to the main stresses, that makes this construction so direct and economical."

But while the concept is simple, the implementation posed difficult problems in design and construction. To mention a few:

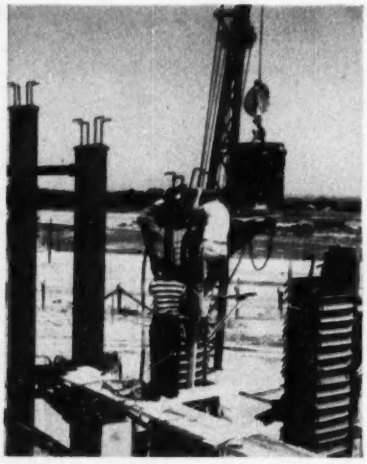
1. Determining the exact length of cables. (End fittings for anchoring the strands generally are attached in the shop; so the exact length must be known in advance.)

2. Laying out the arches for low bending moment and to keep their neutral axis normal to the applied load, thus minimizing torsion.

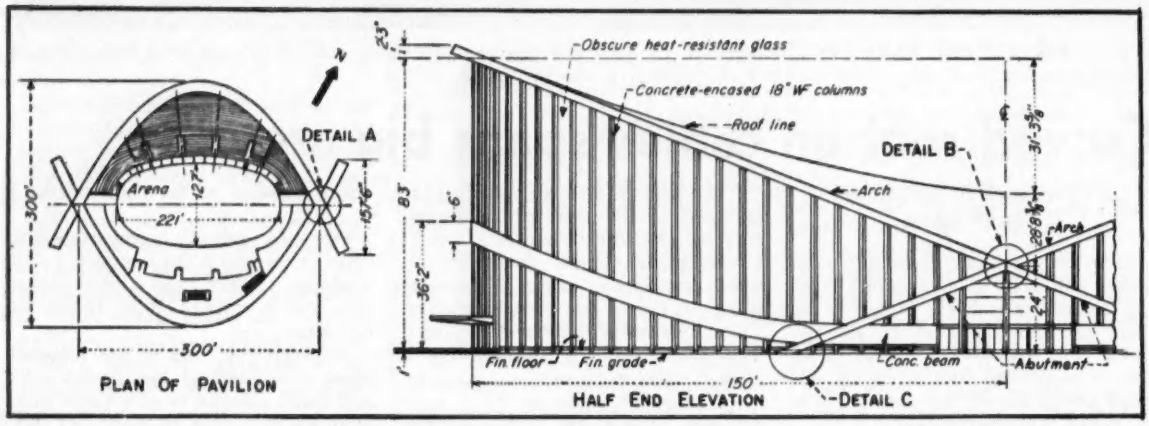
3. Preventing instability of the roof constructon—a problem that was



ARCH FORMWORK was supported on steel channels seated on the concrete-encased steel columns, eliminating need for shoring to the ground.



FORKED CHUTE fed concrete into metal column forms.



STANDS surrounding a large judging floor offer an excellent view at all points, since the long-span roof eliminates interior columns. Arches transmit the roof load to inverted-V abutments, but steel columns carry the arch weight (Elevation).

solved by installation of slanting guy wires between steel girts in the outer walls and certain of the roof-carrying cables that might develop points of counter-flexure.

4. Determining the length of these guy wires.

5. Supporting the arches on the abutments without inducing high bending moments.

6. Preventing the spread footings under the abutment legs from shifting horizontally if the ground is unable to develop sufficient resistance to the horizontal thrust. This was solved by tying each pair of footings together with cables, which were placed in a tunnel between the footings (Detail C).

7. Locating cable supports along the sides of the arches.

8. Connecting guy wires to prevent slippage.

The designers and the general contractor showed great ingenuity in solving these problems. Credit is also due the cable subcontractor, the Bethlehem Steel Co., for computing the exact length of roof cables and delivering them in the proper lengths with end attachments for anchoring, and to John R. Gove, surveyor, of Chapel Hill, N. C., for accurate dimensional control of the fieldwork.

• How the job was tackled—Erection of the pavilion consisted of ten major steps:

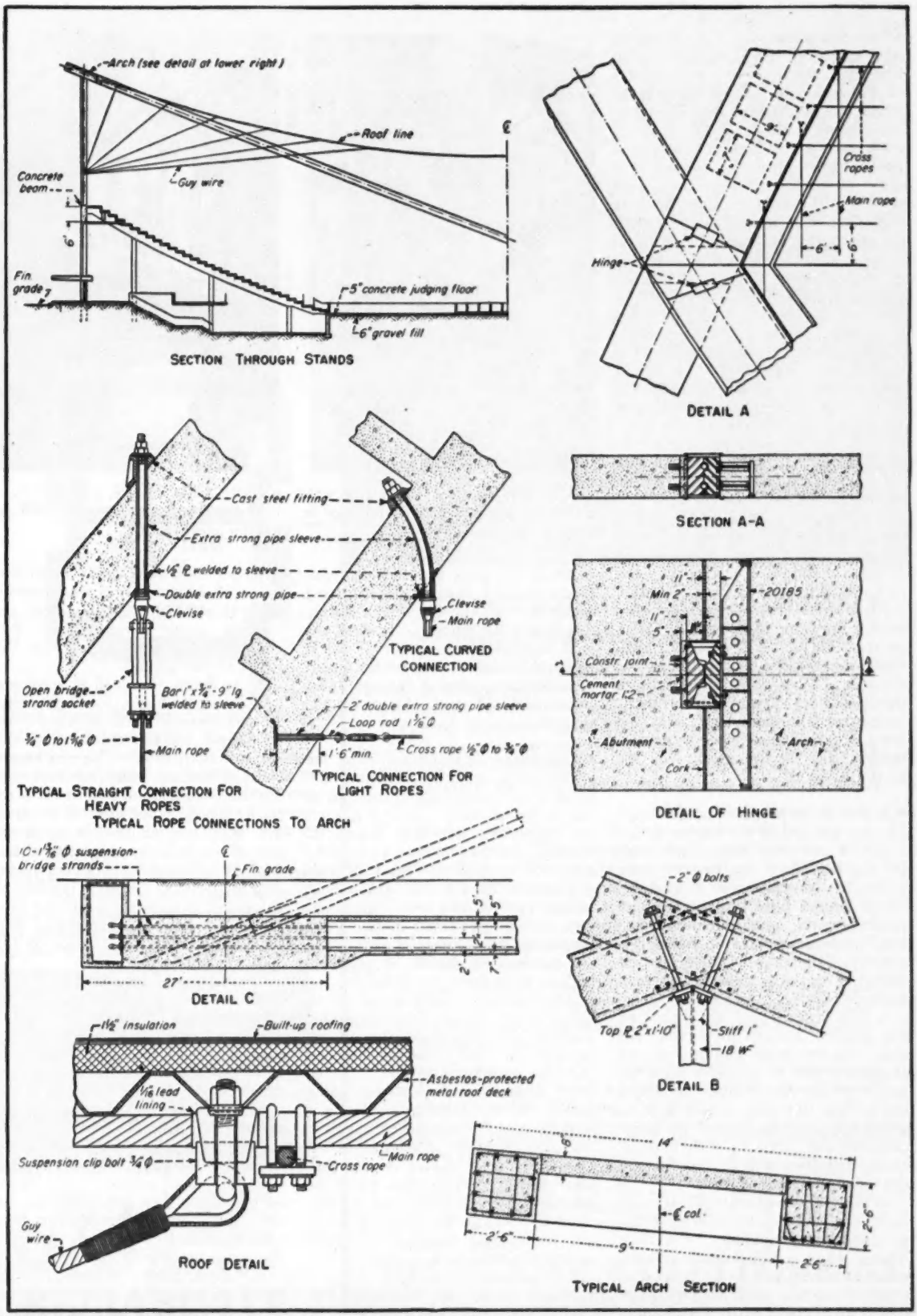
(1) The construction of column footings, basement walls, floor in the peripheral exhibition area in the basement, and the arena floor; (2) construction of abutment footings, cable tunnels and abutments; (3) erection of steel columns and pouring of their concrete fireproofing up to the level of the stands; (4) forming and casting the stands and the column fireproofing above the stands; (5) forming one arch and concreting it; (6) same for the second arch; (7) installation of window frames and glazing; (8) erection and adjustment of cable; (9) placing and attachment of the roof deck; and (10) installation of insulation and built-up roofing.

• Prestressed footings—First stumbling block was installation of the ten 1 5/16-in. dia steel tie cables between each pair of abutment footings.

Casting of the footings had to be delayed until the cables and bearing plates were delivered. During the waiting period, one footing and the center section of each tunnel between footings were cast.

When strands were delivered, they had sockets for anchoring them at only one end. This made it feasible to thread the unsocketed end through ¼-in. dia fiber sleeves in the footings that had been cast, through diaphragms in the tunnels and through a 1-in. thick bearing plate. The missing sockets were attached when the cables were in place. Then, the tunnels and second set of footings were cast, including a vault providing space for tensioning the ties.

As the building was erected and load came on the abutments, the cables were prestressed with 100-ton hydraulic jacks at both ends. Maximum stress in each cable is 25 tons.



NOTEWORTHY DETAILS—Roof is guyed to insure stability; cable anchorages are removable; abutment footings are tied together; arches are hinged at the abutments; and each arch rib is coffered in section and inclined to the plane of the arch.

• **Low-slump concrete**—The abutments were cast next. Each consists of two legs that appear to be continuations of the arch ribs. They support the arches at a height of about 25 ft above the ground.

Forms for the legs were made of plastic-coated plywood. Erected at a slope of nearly 22 deg, they were shored to the ground. Catwalks 2 ft wide were built on both sides of them for use of the workmen.

Because of the slope, the contractor decided to place a stiff concrete, to prevent it from sliding downhill. In this way, he eliminated the need for a top form.

The contractor could exercise close control over the concrete because it was batched on the site and delivered in his own trucks, mixed in transit. He made the concrete for the abutments and arches with ¾-in. maximum-size aggregate, 6½ bags of cement per cubic yard and less than 6½ gal of water per bag of cement. This mix had a slump of 1 to 1½ in. Placed by crane and bucket and vibrated with electric rubber-tipped vibrators, it tested at 4,800 psi in seven days. Design strength specified was 3,500 psi.

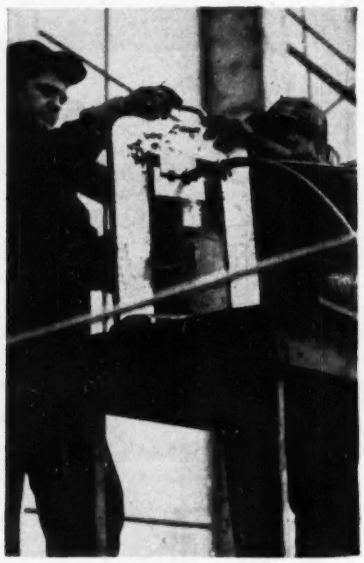
With close control, there were no serious problems in casting the abutments. One feature is worthy of mention, however: The abutment legs, like the arch ribs, are supported on vertical, structural steel columns. One of these, under the abutment peak also can serve as a tension member to prevent uplift if the tie stresses become too great (Detail B).

• **Arches sit on hinges**—The abutment legs are recessed at the top to receive a pair of cast steel hinges that transfer the load from the two opposing arches to each abutment (Detail A). These hinges solve the problem of preventing the arches from inducing bending moment in the inverted-V supports. They also improve the flexibility of the ribs, minimizing temperature effects.

A thin layer of cork was placed on the bearing surfaces to prevent the arch concrete from bonding to the abutments and to permit a slight rotation of the ribs. Then, the hinges and grillage (see hinge detail) were inserted and properly adjusted; the hinge chamber was sealed in with a metal casing; arch formwork was erected, and the arches were concreted.

While the abutments were being built, the steel columns around the perimeter of the building were erected. These 18-in. wide-flange sections, which were required to be encased in concrete for fire protection, range in height up to about 85 ft. Fireproofing was placed at this time up to the line of intersection with the stands.

PRESTRESS is applied to footing ties with a 100-ton hydraulic jack as the roof is erected. (ENR photos)



JOB-DEVISED PRESS, activated by a 100-ton jack, squeezes sleeve on looped guy wire for anchoring it.

Along this line, an 18x72-in. reinforced concrete beam was constructed integrally with the top of the stands. This beam rises from near grade at the arch supports to a height of 36 ft (see end elevation). Its reinforcement is continuous, passing through holes punched in the steel columns for the purpose.

• **Concreting chute devised**—After the stands were concreted, column fireproofing was placed up to the tops of the vertical members, leaving recesses for supporting the arch formwork. Forming and pouring this fireproofing presented one of the most difficult problems on the job. The encasement is thin, but it has to cover continuous wire caging and riveted splices; struts frame into the columns at various levels; and concrete has to be placed as high as 84 ft above the ground.

The contractor used metal forms, which had to be set from suspended scaffolds. He experimented with the concrete mix and found he obtained the best results with ⅜-in. crushed stone aggregate and an air-entraining agent. But the problem of placing it in the forms was not solved until the job superintendent developed a 4-ft long sheet-metal chute for the purpose. Clamped to the open top of the column form, this chute had a bifurcated lip to guide the concrete alongside the column flanges and around them against the web.

• **Money saved on falsework**—The steel columns were erected before the arches, and the contractor utilized them to support the arch formwork. After six months of study of various falsework designs, his general superintendent and job superintendent devised a money-saving scheme that eliminated the need for shoring the forms to the ground.

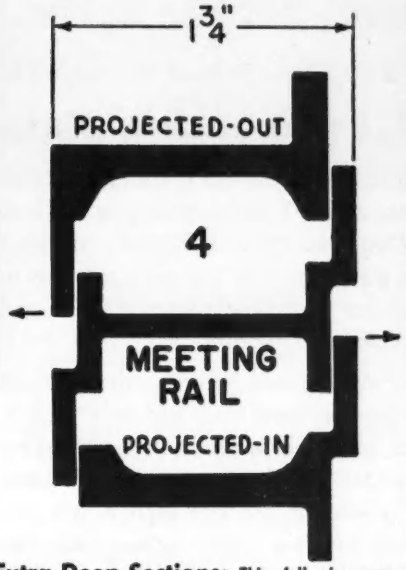
In so doing, they had to solve several unique problems, for these arches are considerably different from those commonly encountered in roof and bridge construction. The ribs have a coffered section (see Detail A and Typical Arch Section on p. 33). They are 14 ft wide in the plane of the arch, thus projecting about 7 ft on either side of the columns supporting them. Each arch axis lies in an oblique plane. And in addition, the rib is inclined to this plane, to maintain alignment with the end slope of the cables and thus keep the neutral axis normal to the applied load.

One arch was formed at a time. The concrete—same mix as was used for the abutments—was placed in plastic-coated plywood forms. These were flanked on both sides by catwalks provided with handrails for the safety of the workmen.

Chief support for the forms and catwalks was a pair of 20-ft long steel channels that were clamped at the top of each of the steel columns. Erected with the aid of a crane, these 12-in. deep channels were set parallel to the arch rib. Near their midpoint, they were supported on vertical clip angles that were seated in recesses in the column fireproofing. Channel ends rested on adjustable shores that enabled corrections to be made to bring the steel members to the proper height and slope. The shores were

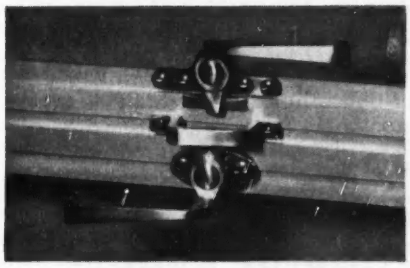
Where the *other* services also count – it's always BAYLEY WINDOWS

Two of the many important features of BAYLEY design

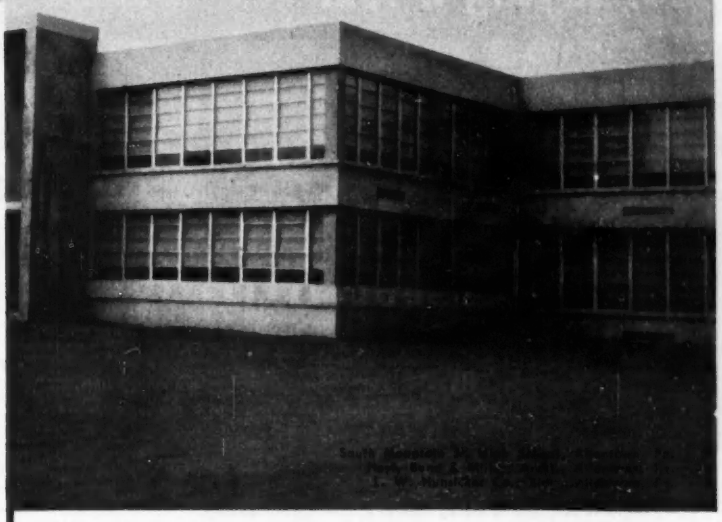


Extra Deep Sections: This full size section of the combined meeting rail and ventilator section (full 1¾" horizontally and 2¾" vertically) show how "Thermopane" or "Twindow" glazing can be accommodated. Also, ample room between ventilators and frame members is provided for substantial built-in hardware, such as ventilator shoes and limit arms.

Rugged White Bronze Hardware
Sturdy, positive-acting handles fit neatly to the flat surface of the window and are securely mounted with grommets embedded in the section. No mechanical parts to become loose or require maintenance!



73 Years of RELIABILITY



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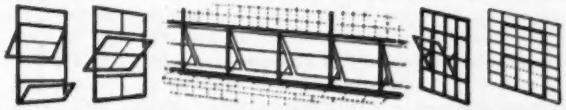

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Grade of Asphalt.....	Application Rate....gals. per sq. yd.
Penetration.....	
Depth of Top Course ..... inches	COVER MATERIAL
Aggregate Content.....%	Type of Aggregate.....
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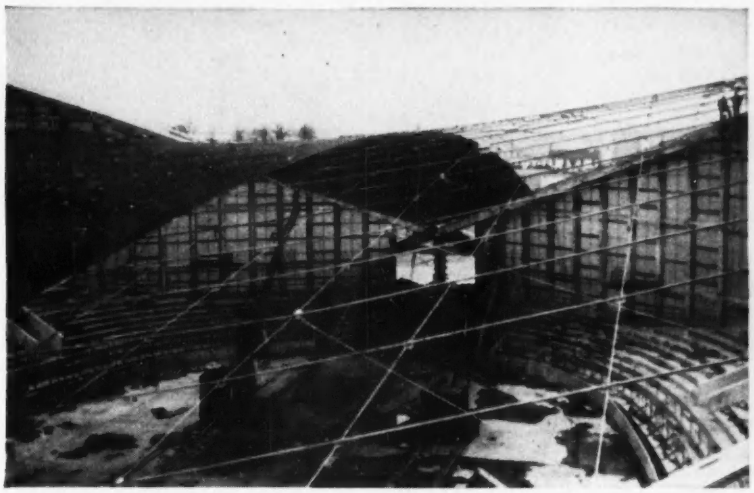


METAL ROOF DECK fastened to the cable grid forms a saddle-shape roof. Men in crow's nests on the end of crane booms secure the roof straps to the cables.

supported on collars bolted around the columns.

Wood nailers were bolted to the top of the channels, and eight 6x6-in. oak timbers were laid to span the gap between successive pairs of channels. On top, to support the plywood forms, 3x4's were placed transversely 12 in. on centers.

• **Reinforcing bent in forms**—Rib reinforcing was fabricated into cages on the ground. Hoisted to the forms in 40-ft lengths, they were warped to the arch curve with ratchet hoists and blocks. All laps were welded to prevent displacement of the cages, and finally, transverse steel at the columns was welded to column tops and to the longitudinal reinforcing.

Through bolts, sleeves and clevises for anchoring the cables were placed under the control of a theodolite working from a precise base line on the arena floor. For the purpose, the structural engineer furnished the contractor with a set of three coordinates for each sleeve location on the face of the arch. These coordinates had been calculated from the arch equation with an electronic computer.

Concrete for the arch was placed in sections about 60 ft long, alternately on opposite sides of the building. It was water-cured for seven days, after which time the forms were stripped. When the first arch had been completed, the second arch was formed and concreted in the same manner, and the building was ready for its roof.

• **Double-curved roof**—Cables were delivered on reels, prestretched and socketed for attachment to the arches (see typical rope connections on p. 33). Rolled off the reels on the arena floor, the cables were pulled up to their anchorages by a crane. They were brought to the proper sag by adjusting turnbuckles.

Spaced 6 ft apart in perpendicular directions, the cables form a grid, which, when covered with roof deck, is a double-curved surface shaped like a saddle. In one direction, the center of the roof is lower than the outer portion, whereas in a perpendicular direction, the center is higher.

The main cables—the ones that principaly carry the weight of the deck—span in the direction with the sag. They are galvanized bridge strands, ¾ in. to 1⅛ in. in diameter, depending on the span. They were designed for a dead load of 6 psf and a live load of 25 psf.

The cross cables vary in size from ½ to ¾ in. Their purpose is to help distribute the load to the main cables and to resist uplift. (The roof is designed for an uplift of 16 psf.) Since temperature rises expand these cables and lessen their ability to function against uplift, most of them were prestressed, and guy wires were inserted between the roof and the outer walls to assist the unprestressed ones.

• **Men on crane booms tie cables**—The cross cables and main cables are clipped together at their intersections. Above the judging floor, the connections were made by men standing in crow's nests on the end of crane booms. Above the stands, the men worked from the upper side of the cables, using a plank scaffold and safety belts.

To prevent the roof from becoming unstable under unfavorable temperature and wind conditions, guy wires were attached between steel girts in the walls and cables that might develop a point of counterflexure. The guy wires are equipped at the wall end with adjustable springs to permit the roof to rise and drop with temperature changes.

• **Guys socketed on the job**—The cable subcontractor found it impracticable to compute the length of the guys. So they were delivered with fittings on only one end, for attachment to the roof cables, and their length was determined when they were in place. That meant that some means had to be found to force a fitting on the wall end of each guy for anchoring it.

The general contractor came up with a clever solution of this problem. He built a small press and used a die furnished by the Bethlehem Steel Co. for squeezing an oval sleeve on a looped guy. To apply the required pressure, he borrowed one of the 100-ton hydraulic jacks that he had been using for prestressing the abutment footings.

• **Metal deck clipped to cables**—As soon as the cable grid was connected up, erection of the roof deck was started. The under side was painted with aluminum paint. Then, the sheets of 22-ga asbestos-protected metal were placed in a strip across the center of the roof, between the two arch abutments. This strip of lapped sheets was gradually widened, the workmen distributing the deck from the portion already in place.

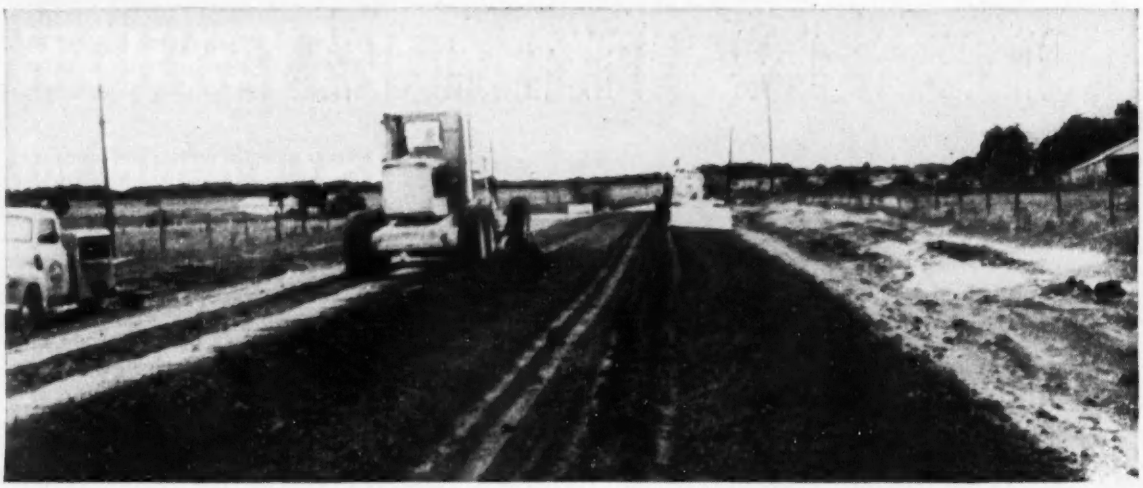
Where cutting of the sheets was necessary around the perimeter of the building, a portable, lightweight, power-driven hack saw made the task easy. Holes for bolting down the sheets were power-drilled with light portable equipment.

Straps tying the roof deck to the cables were placed from below.

Meanwhile, the windows were being installed between the steel columns, which served as mullions. Unusual care had to be taken to start the steel sash at the proper elevation near the bottom to assure fitting of the frames at the top.

• **Designers and builder**—Wm. Henley Deitrick, of Raleigh, N. C., is the architect for the livestock judging pavilion. The late Matthew Nowicki, acting head of the School of Architecture and the school of Design at North Carolina State College, proposed the tension-compression scheme for supporting the roof. Severud-Elstad-Krueger, of New York City, is the structural engineer.

The William Muirhead Construction Co., of Durham, N. C., is the general contractor. E. F. Matteson is general superintendent and E. A. Fulton, job superintendent.



BOTH A BLADE GRADER AND A PULVERIZER were used to work quicklime into the soil after the required amount had been distributed with a spreader. Water was added as needed to slake the lime and provide the specified moisture content. (Photo by Chester McDowell)

Texas stabilizes roads with quicklime

Some savings in cost of treating road bases made by substituting quicklime for slaked lime

USE OF UNSLAKED LIME as a substitute for slaked lime in road-base stabilization has had its first test in Texas. This substitution was made primarily as an economy measure to determine whether the less costly quicklime in bulk form could be substituted for slaked lime in bags.

The test installation was put down by state forces of the Texas Highway Department in May and June of last year on a half-mile section of a farm-to-market road in Chambers County, about 25 miles from Houston, a road which serves both farms and oil fields to the south of Cedar Bayou. Earlier in the year it was taken over by the state for reconstruction and widening.

The Texas Highway Department has been using lime stabilization on secondary roads since 1945.

It has found that adding from 3% to 5% of hydrated lime to the natural clay soils of that region reduces the plasticity index from a high of 60 to 70 to a value between 5 and 15. The liquid limit of the soil also is lowered, but the most remarkable change is an increase in the compressive strength. Cores taken from some of these lime-stabilized soils have compressive strengths approaching one-third that of portland-cement concrete. However, not all soils attain that high strength. On the recent Chambers County work, strengths were only about one-eighth that of concrete.

• **Possible cost savings**—Success with hydrated lime led to a decision to try unhydrated lime in bulk. Because no moisture has been added, a ton of quicklime has the lime (CaO) content of 1.32 tons of hydrated lime. There also is a price differential favoring quicklime. In Texas, bulk quicklime is selling currently at the plant, for $9.50 a ton whereas hydrated lime in 50-lb bags sells at $13.00 a ton.

At these prices, it would appear that 81% more road could be stabilized with quicklime than with hydrated lime, but due to other costs introduced by the use of quicklime, and the fact that hydrated lime now can be obtained in bulk at a lower cost per ton, about 20% more base can be stabilized with quicklime at the same total cost.

• **Three test installations**—On the half-mile test installation in Chambers County, three types of base and subbase were laid:

(a) For a length of 800 ft, a lime-stabilized subbase 6 in. deep and 30 ft wide was put down, consisting of 50% sand and 50% clay soil with the addition of 4.5% quicklime, based on the clay content of the sand-clay mixture. Over this a 6-in. base course was laid. It is a mixture of sand and oyster shell with a binder content of 45% having a plasticity index of 6.

(b) For 900 ft a 6-in. subbase was put down in two lifts. It was composed of natural clay soil with the addition of 4.5% quicklime. Over this was placed a base course of similar depth consisting of the clay soil to which 8% of quicklime had been added. It also was put down in two lifts.

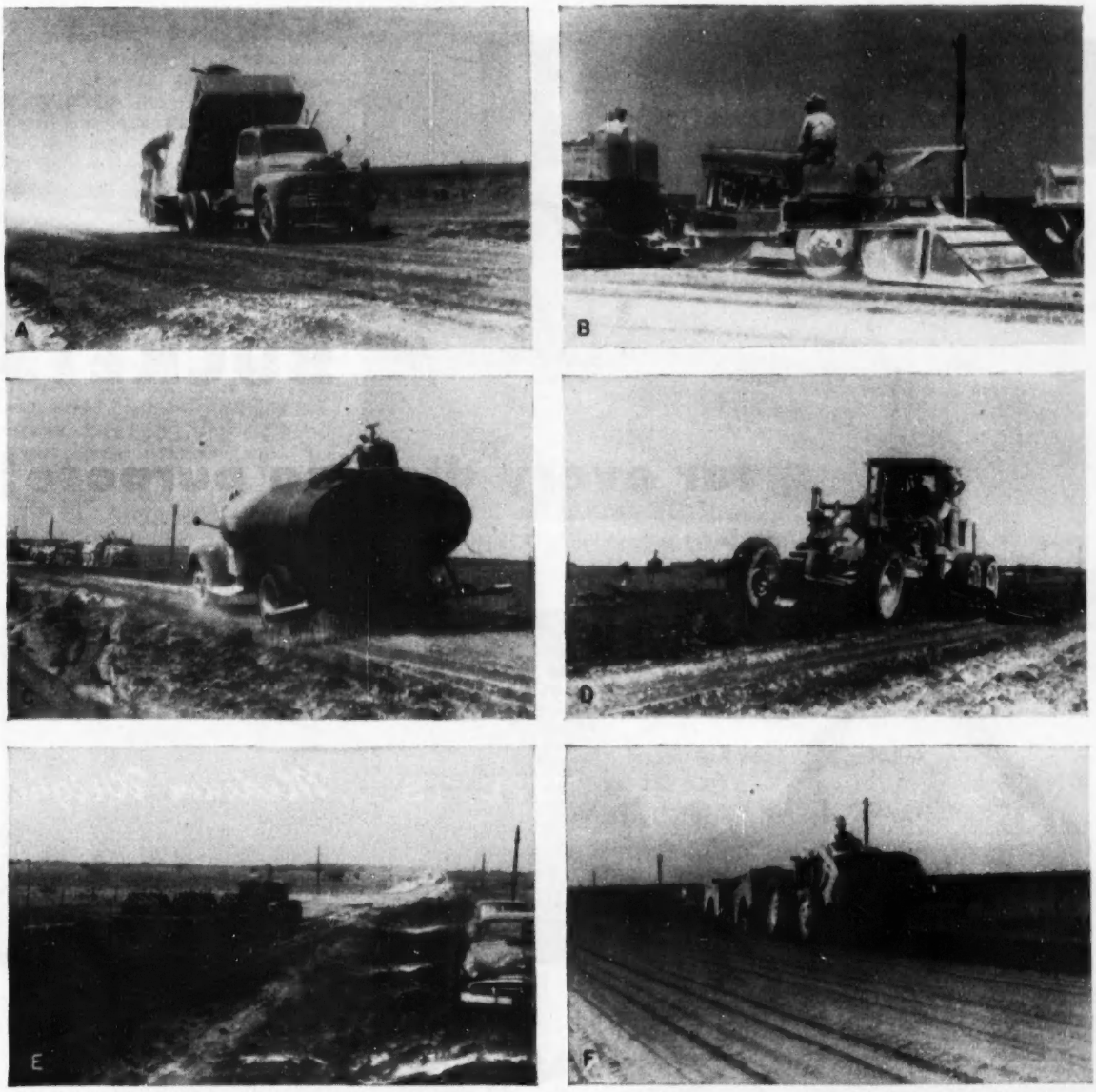
(c) On a third 900-ft section the same subbase as in (b) was laid. The base was the same as in (a) except for a 200-ft length in which the clay soil, treated with 8% quicklime, was mixed with oyster shell instead of sand. This mixture has a binder content of 47% with a PI of 8, which is within the limits set by the Texas Highway Department.

Upon completion of the base, all three sections were given a prime coat of MC-1 asphaltic material for a width of 19 ft, followed by a one-course asphalt surface treatment consisting of OA-230 asphalt with crushed stone as a cover material.

• **Construction procedures**—Clay soil was obtained from side ditches and backslopes, it was hauled in scrapers and spread with a maintainer preparatory to receiving the quicklime.

Quicklime came from local lime plants in covered hopper-bottom rail cars. A screw conveyor unloaded the quicklime into dump trucks for transporting to the job, where a conventional-type aggregate spreader box was used to distribute the required amount of quicklime per station on the road. Since this operation produced considerable lime dust, men operating the equipment were protected at all times with safety goggles and respirators.

Immediately after the quicklime had been spread, it was worked into a windrow with the clay soil to prevent the lime from blowing off the road. Mixing operations were started as soon as possible with a motor grader



SIX STEPS IN THE STABILIZATION PROCESS: (a) Spreading the quicklime over the graded highway; (b) pulverizing to mix lime into the soil; (c) sprinkling; (d) blading the lime-soil mix; (e) compacting with sheepsfoot rollers; and (f) finishing with pneumatic-tire-rollers.

and a soil pulverizer. All during this operation, water was added until slaking of the quicklime was accomplished and optimum moisture for compaction was reached. The admixed soil was then spread and compacted by a sheepsfoot roller and finished off with a pneumatic-tire roller.

Some difficulty was experienced in getting the water to penetrate the soil, because of rapid surface evaporation and soil adsorption in the dry climate. To overcome this difficulty it was necessary to windrow the moist portions to expose the underlying "dry" quicklime-soil mixture for wetting. The water requirement was high; a total of 283,000 gal was required to hydrate the quicklime and to bring the soil moisture to optimum. An additional 150,000 gal was used to keep completed lifts of stabilized material damp until succeeding lifts could be placed.

Observers of this work have suggested that the lime and the water necessary to bring the soil moisture to optimum might be applied to the soil in one operation. The quicklime could be hydrated and made into a slurry in a tank truck and sprayed in the required quantities on the road base courses.

Approximately 152.5 tons of quicklime were used to stabilize the entire half-mile project.

• **Cost of the work**—The cost for stabilizing the half-mile test project averaged $3.10 per cubic yard (compacted measurement). A breakdown of this figure for the cost per cubic yard is as follows:

Common road exacavation	$.55
Quicklime	1.17
Handling lime	0.38
Mixing	0.67
Sprinkling	0.21
Rolling (tamping)	0.06
Rolling (pneumatic)	0.06
Total Cost	$3.10

Thus, a square yard of 6-in. depth quicklime stabilized subbase costs approximately 50 cents, a figure which compares favorably with other types

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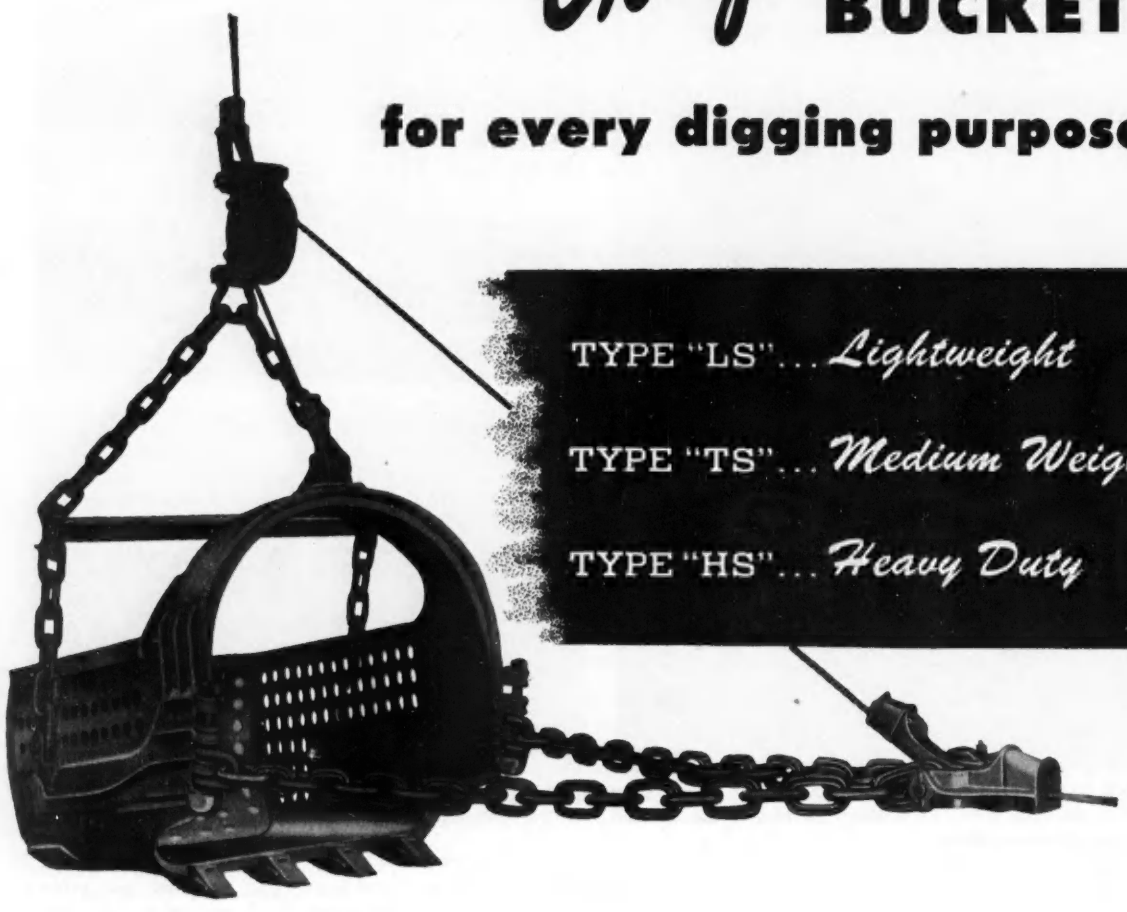

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of stabilization. Stabilizing longer stretches of highways with improved material handling techniques could be expected to result in a reduction in cost in quicklime stabilization. Also any experimental road project with its variations in construction procedures, such as outlined here, costs more than normal projects.

• **Quicklime stabilization results**—The only information available at this time concerning the properties of the clay before and after stabilization is on that portion of the job where 4½% quicklime was used. The natural clay soil before the addition of quicklime had a liquid limit of 89.6 and a plasticity index of 67.0. After the stabilization process was completed, the liquid limit was reduced to 53.6 and the plasticity index to 15.9.

The dry density of the stabilized material, obtained by actual construction methods, was 87.5 lb per cubic foot. Tests completed to date indicate that in most cases results obtained on the road under construction conditions are as good if not better than previous laboratory tests. Further tests, including compressive strength measurements, will be made as aging continues.

D. W. Syphrett, senior resident engineer, and H. T. Smith, chief inspector, of the Texas Highway Department, Anahuac, Texas, were in charge of the design and construction of the test project. Quicklime for the project was supplied by three concerns: the United States Gypsum Co., the Austin White Lime Co., and the Round Rock White Lime Co.

• **Trouble with surfacing**—Mr. Syphrett says that one month after completion of the test pavement in Chambers County the one-course asphalt surface treatment failed on the lime-stabilized base section because the base was not cohesive enough to withstand the traffic stresses transmitted to it through the thin layer of surfacing. Consequently that section, except for a length of 300 ft, was resurfaced with a 3-in. layer of sand-shell admixture, and was given a single asphalt surface treatment. The 300-ft section was resurfaced with 1 in. of asphaltic concrete.

The Texas Highway Department believes that the additional sand-shell admixture paved with a single asphalt surface treatment will be adequate for light traffic. The 300-ft section of 1-in. deep asphaltic concrete is an experiment to determine whether that type of surfacing will distribute the traffic stresses over a wide enough area of the lime-stabilized base to result in the asphaltic concrete surface adhering to the base.

NEW WOOD-STAVE PIPE costing $37.40 per ft replaced $6.51-per-ft line in service since 1908.

Power company speedily removes wood-stave pipe, builds new line

California Electric Power Co. finds a fast way to take out 48-in. redwood pipe still in service after 44 years

NEW WOOD-STAVE PIPE replaced old on a recent project of California Electric Power Co. The 3,350-ft replacement job near Bishop, Calif., was noteworthy: (1) as a testimonial to redwood pipe and (2) for its method of removing the old pipe.

Old 48-in. pipe was replaced with new 54-in. The old line had been in since 1908, and some 5,000 ft of it will remain in service for at least another two to three years.

Staves of the portion replaced were still serviceable; but leaks were becoming more frequent, and the possibility of a blowout was feared, making replacement advisable.

As described by Paul H. Yelton, construction engineer for Calectric, the old staves were 1⅞-in. net thickness by 5½ in. wide. There were 29 to the circle, bound by ½-in. steel bands. At ends of staves the ⅛-in. thick steel tongues acting as water seals were still sound. But the stave ends themselves were deteriorating on the inside at the butt joints. In many cases the wood had worn away to expose the steel tongues. Mr. Yelton says one theory blames driving during assembly for bruising the stave ends, which resulted in causing their subsequent breakdown.

Old bands and shoes were not badly rusted; the line had been buried in well-drained glacial morain which retained little moisture.

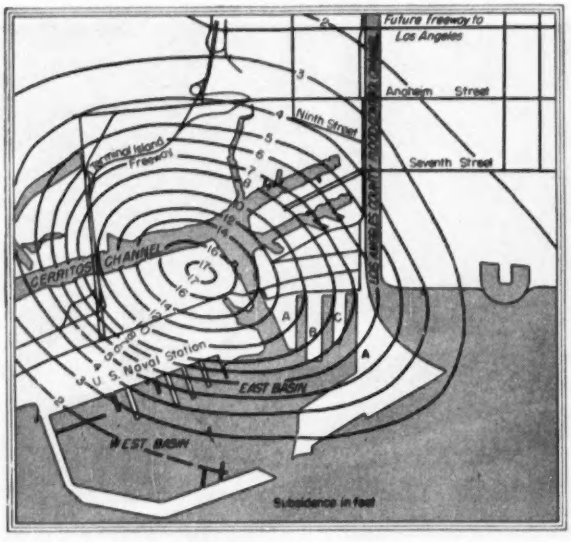
• **Removal method**—When it came to removing the existing pipe from the sidehill shelf on which it was laid, the 4 to 6 in. of cover was shoveled off by hand. The pipe was drained, and the top (key) stave was knocked in along the full length. An angle-dozer next pushed away earth on the down-hill side of the pipe.

With the key stave out, the remaining staves were easily collapsed. Each "run" of staves was lifted, engaged by a cable sling and then dragged out—leaving the steel bands standing like so many ribs. Cable from a winch was looped around a group of 40 or 50 bands, and as the loop was tightened the bands were pulled into a bundle for convenient removal.

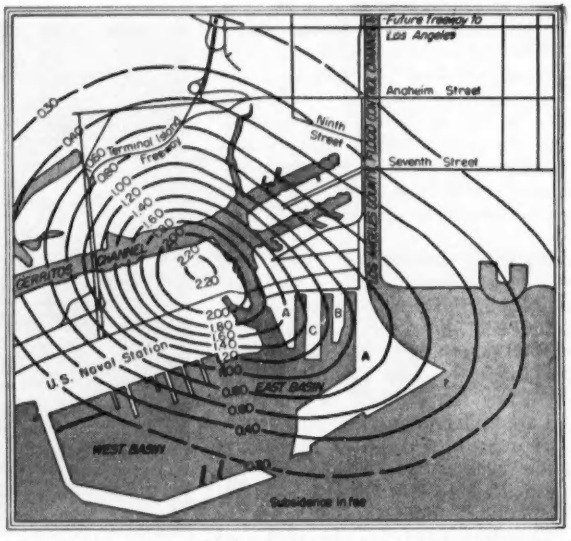
It took only 7½ days to remove the 3,350 ft of old line by this process. A record for the job was set as four men removed 600 ft in a single day.

The pipe itself has 1⅞ x 5⅞-in. (net) tongue-and-groove staves averaging 14 ft 6 in. in length—32 to the circle. Metal tongues were again used at the stave ends. New steel bands are ½-in. in the upper portion of the line and ⅝-in. in the lower length, where pressure is greater.

Calectric's own forces did the replacement job, under E. I. Bulpitt, superintendent of hydro generation. It was a $125,000-project accomplished with plant outage kept to 49 days.



CONTOURS OF TOTAL SUBSIDENCE since oil pumping began center near an inner harbor channel. Downtown Long Beach has been subjected to significant but not destructive settlement in the last 15 years.



CONTOURS OF ANNUAL RATE of subsidence in feet per year show the high rate reached during the last year—highest rate yet. Officials expect rate to decrease soon. Pressures in some oil-producing zones already are greatly reduced.

Land subsidence repairs mount into millions

SUBSIDENCE in the waterfront area of Long Beach, Calif., had exceeded 17 ft by the end of 1952. At this stage of the 15-year-long area settlement, authoritative estimates set the maximum to be attained at about 25 ft. This will be reached some time after 1960.

Officials now have been led to two general conclusions: (1) Arresting the subsidence by some form of repressurization is now impracticable. (2) Total expenditures required to protect installations from damaging horizontal movements and tidal inundation because of the settlement ultimately will reach $120 million.

• **Rate accelerates**—The subsidence is due to reduction of fluid pressures in the various producing zones of the Wilmington oil field. It has taken place since the field went into production in 1937. Maximum settlement by 1945 was only 5 ft. Thus, it can be seen that the rate has greatly accelerated since then. Maximum rate in the last year has been 2.2 ft per year.

Estimates of total ultimate subsidence are based on studies of probable future drawdown in fluid pressures in the field. Initial pressure in some producing zones was in excess of 2,000 psi. Pressures have now been reduced in many areas and zones to a 200-300 psi range.

In addition to the total settlement of 17 ft, a horizontal movement as great as 6 ft to 8 ft in some instances has been recorded. Where differential horizontal movements are great, considerable surface and subsurface damage has occurred.

• **No halt in sight**—Officials of agencies affected by the subsidence are still studying possible subsurface remedial methods. However, they admit that there is probably nothing effective that they can now do to stop the subsidence. Studies center around methods of repressurization with gas or water.

Part of the reason why repressurization will not be undertaken as a remedial measure is a matter of law: Property involved is held in thousands of ownerships and there are literally hundreds of oil producing agencies. Agreements with all these producers and owners would be necessary before work could start. Besides that, a change in the Long Beach city charter would be required before the city—one of the major oil producers—could enter a unitization agreement.

There are technical reasons, too: For one thing, about three-fourths of the estimated total subsidence has been reached. It is doubtful that any extensive repressurization program undertaken now could have a great effect on reducing the settlement rate.

And the field is divided into 6 known fault blocks separating the oil pools. Further, there are seven different major producing zones in various subterranean strata, and these major zones are even further divided. Thus, water flooding of all the oil-producing zones would be a very difficult task.

Nevertheless, a pilot gas-injection plant is now being built by the Long Beach Harbor Department. This may determine if repressurization will be effective.

The main purpose of the pilot plant is to conserve gas and improve oil production. Many doubt that the effect of the gas injection on subsidence will even be noted if attempted full-scale.

Water flooding is also being studied with the likelihood that a Harbor Department pilot plant will be constructed soon.

• **Protective works**—To date all the agencies involved have spent some $35 million on protective works necessitated by the subsidence. This includes work done by the U.S. Navy (ENR Feb. 8, 1951, p. 32), Ford Motor Co. (ENR July 21, 1949, p. 39), Los Angeles Harbor Department (ENR April 21, 1949, p. 18), Union Pacific Railroad, Southern California Edison Co., and the Port of Long Beach.

Remedial work started in 1943, and it is estimated that it will continue in some form until 1967. Before all the work is done an estimated $120 million will be spent—$40 million by public agencies, $40 million by private agencies, and $40 million by oil interests.

These expenditures will be made to protect installations on which initial capital investment amounted to an estimated $500 million.

Most agencies pay for the work directly from oil revenues. Produc-

tion has surpassed 100,000 bbl a day for many years. At present prices, this amounts to a net income of $150,000 a day. Total income to date for the City of Long Beach alone is in excess of $100 million. So, it can be seen that the large expenditures are justified.

• **Harbor Department work**—One of the agencies most affected is the Long Beach Harbor Department. This organization has carefully prepared an advance schedule of work to be done so that facilities can be protected before they would suffer inundation during high tides. The schedule is made up with the view of continuing operations with minimum interruption.

For example, bulk loading facilities were located on the western side of Pier D. That side of the pier is now under water at high tide. Work was completed recently that involved building the east side of that pier up to a safe level, using imported fill and steel sheet pile bulkheads. The loading facilities were out of service for a 2-week period to permit moving them from the west to the east side. This work is now being followed by building up of the west side of Pier D with a cyclopean concrete quay wall designed to meet anticipated subsidence.

Another example of Long Beach remedial work is at Pier One (Berths 47, 48, 49 and 50) in the Inner Harbor. This oldest city pier is due to be submerged at high tides in a few months. Remedial work will take the form of a cyclopean concrete quay wall surrounding the existing pier and raising the central filled area to a higher elevation. A new concrete transit shed will be built to replace two small steel frame structures to be moved to other locations.

The Harbor Department at present has 21 deep-water berths for cargo ships, 13 of which have covered unloading facilities. Each of these berths is needed at all times. Thus, the scheduling job involves making sure that at least 21 berths, 13 of which are served by transit sheds, are always available at one location or another.

Flood control and freeway facilities are also involved in the construction work. That's because the subsidence rate is such that the levees on each side of the Los Angeles River flood control channel must be even higher than otherwise. So the already substantial construction program for freeway and flood control facilities is even larger and made more difficult.

A federal appropriation of $1.3 million will start work on new levees in April, 1953.

Old bridges are flood hazards and new bridges crossing the channel are necessary. The City of Long Beach already has undertaken some of this work with construction of a new Anaheim Street bridge at a higher level. The Harbor Department has plans under way for a freeway connection that includes a new diagonal bridge across the Long Beach Freeway that joins the Los Angeles River Freeway partly under construction by the State Highway Department.

Some of the property in the subsidence area is now held for commercial or residential uses. This will have to be redeveloped completely. It is not certain just how this will be approached but probably on a redevelopment agency basis using existing state and federal laws. These areas are now at El −2 with high tide at El +7½. Ultimately they will settle at El −10. Redevelopment will involve clearing of all existing facilities and filling the area to bring it up to a safe grade.

Subsidence problem is widespread

Long Beach is not the only place where subsidence has been a problem. Other instances of settlement due to oil withdrawal have been noted in the Goose Creek area in Texas and at Lake Maracaibo in Venezuela.

Subsidence due to water pumping for irrigation and domestic use has been a factor in Mexico City and California's Santa Clara Valley. The latter settlement has been largely arrested by stabilizing the water table. A series of earthfill dams around the valley perimeter impounds storm runoff for later gradual release to percolate into the subsurface strata. Result is that the ground water level is no longer receding.

The newest and most widespread areal subsidence due to water withdrawal is in the San Joaquin Valley area of California's great Central Valley. And this situation isn't exactly new. It has been spotlighted recently by release of data from a Bureau of Reclamation report.

The San Joaquin settlement could have serious consequences because of the complex system of canals involved in the Central Valley project that stretches literally for hundreds of miles. These canals are constructed on precise gradients to guarantee water flow at the proper velocity and quantity. Differential settlement of parts of the canals could mean costly remedial work.

Location of the most marked subsidence is an area of 10x25 miles centered on Delano, Calif. There settlements of 1 ft to 8 ft have been noted. Maximum annual rate of 0.75 ft per year has been established fairly definitely.

Strangely enough, Delano is located only 32 miles by state highway north of Bakersfield where two destructive earthquakes were experienced last summer (ENR July 31, 1952, p. 26 and Sept. 11, 1952, p. 24). No relation between the subsidence and the earthquakes has been established, but the possibility is obvious.

Rate of the Delano settlement was firmly established during surveys for distribution systems to deliver Central Valley project water to the Delano-Earlimart Irrigation District and the Southern San Joaquin Municipal Utility District. (Construction of the SSJMUD system was described in ENR Oct. 11, 1951, p. 34.) These surveys showed a 2-ft subsidence between 1948 and 1951. The recent USBR surveys were related to first order levels run by the U. S. Coast and Geodetic Survey in 1931 and again between 1940 and '43. This gave the total subsidence and proved that the settlement has taken place over at least a 20-year period.

Although the USBR report assigns no direct cause of the sinking, it must be concluded that it is the result of lowering the ground water level due to pumping for irrigation. This lowers the pore pressures in the alluvial soils with resultant compaction.

Water imported into the area via the Friant-Kern Canal was first delivered in 1951. As more distribution systems were completed, increased quantities were brought in during 1952 and even more is expected in subsequent years. The U. S. Bureau of Reclamation plans on keeping close check to determine the effect on the settlement by the ground water recharge caused by the newly imported water.

Subsidence in lesser amounts has been noted elsewhere in the San Joaquin Valley area, particularly near the Mendota Pool. Although this is not serious yet, it will be watched closely. That's because if settlement becomes substantial there may be a serious effect on flood capacity of channels flowing into or out of the pool area.

Correction

Rex M. Whitton, state highway engineer of Missouri, was one of the men named as regional vice-president of the American Association of State Highway Officials at the association's recent annual meeting. His name was incorrectly given as Whitcon in the report of that election on page 53 of our issue of Dec. 25.

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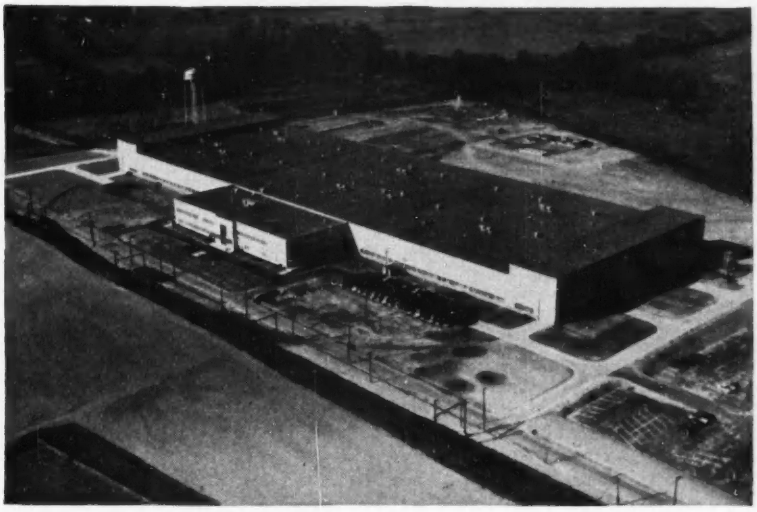
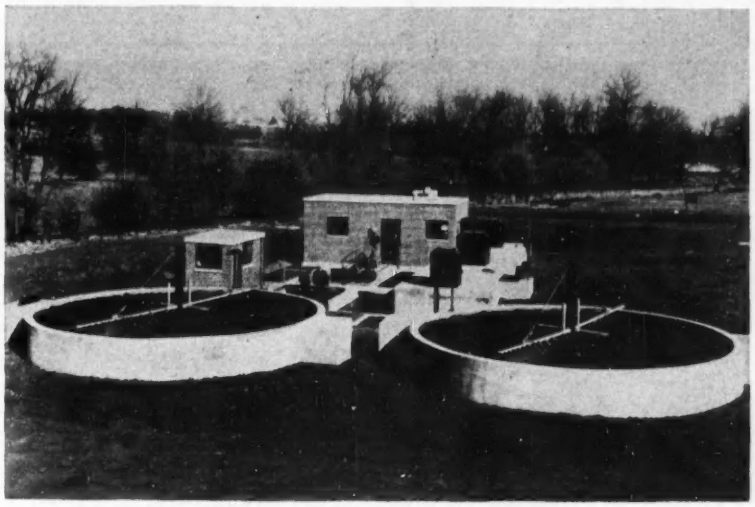


Industrial plant gets



deluxe sewage works

THE OLD SAW about shoemakers' children going shoeless has no place in Colmar, Pa., where Link-Belt Company—maker of water and sewage works equipment, among many other things—has one of the fanciest sewage works ever built to serve an industrial plant.

There at Colmar, north of Philadelphia, Link-Belt will produce no waterborne industrial wastes. Just a 90-gpm flow of sewage from an eventual 1,400 persons needed disposal. But this new Austin-built home of the company's sanitary engineering division has a $150,000 complete-treatment bio-filter layout, which also will double as a research and development laboratory.

The more-than-ample treatment facilities include a primary and a final settling tank, two filters, a digester, chlorination equipment and sludge drying beds.

Both settling tanks were designed with sloped bottoms, as a result of research Link-Belt has done during the past two years along with J. L. Dallas of the Massachusetts State Health Department. Studies indicate a settling tank with depth that decreases rapidly in the direction of flow and with a multiple-weir overflow achieves greater results than conventional, rectangular tanks.

The primary tank is being operated with this rapid slope feature; the final tank has the slope but is being operated with a flat false bottom for the present in a comparative analysis of the two tank types.

Preaeration will be checked in the experimental sewage works. There are air diffusers at influent ends of both settling tanks. The plant will operate on a 2 to 1 recirculation rate, 180 gpm constantly recirculating as 90 gpm enters and leaves.

Settled sludge will be pumped to a sludge digester and then to a storage chamber at the end of the digester. When the storage chamber becomes full, it will be emptied by sludge pump to a drying bed unit. Each of the five drying beds will hold one storage-chamber full of sludge, and has a drain connecting with the primary tank influent.

During normal operations the raw sludge from the primary and final tanks is pumped to the digester once or twice a day. During this pumping operation, an equal volume of supernatant liquor is discharged from the digester to the raw sewage flow at the screen chamber.

In the plant's laboratory there are space and facilities for analyses on industrial wastes, for which L-B might be designing treatment equipment.

• **The manufacturing plant**—Link-Belt's Colmar plant will produce conveying and processing machinery in addition to its sanitary engineering division's products. Right now, although the 300,000-sq ft factory is not nearly fitted for full production, work is already under way on ore-handling equipment for Orinoco Mining's vast Venezuela operation.

Manufacturing space is an 880 x 300-ft building planned for future expansion to 880 x 600. Traveling cranes (two 20-ton, one 10-ton and one 5-ton) facilitate straight-line flow of materials across the building. Structural steel roof trusses span 60 ft and provide 32-ft head-room in the main aisles. Cross aisles at either end of the plant, also with traveling cranes, have 42-ft clearance and admit railroad cars for shipping and receiving. A 240 x 100-ft office building at the front of the plant has its entire second floor devoted to engineering activities.

Corrugated asbestos encloses the plant. Its roof is metal deck with ¾-in. glass fiber insulation and 20-year built-up roofing.

The work area is lighted by 500, 750 and 1,000-watt sealed beam reflector lamps installed at the bottoms of the roof trusses.

The Austin Company designed and built the plant. Design of sewage plant was under supervision of Joseph J. Gilbert, engineer-in-charge of L-B's sanitary engineering division.

Many cities are planning garages

Legal snarls halt some projects in late planning stages but others are advancing toward completion

The work of providing space for automobiles which would clear them from the already traffic-bound streets continued to occupy the attention of many municipalities.

A sample survey of progress in cities around the country indicated that many of them must still clear away the legal underbrush before they can begin planning parking projects. Other cities have made a start on ambitious parking garage projects and some are in the mid-stages of their programs.

Here is the picture from the viewpoint of the cities:

• **Philadelphia gets go-ahead**—In a precedent-making decision the Pennsylvania State Supreme Court and the Philadelphia County Court both ruled that the Philadelphia Parking Authority may proceed with construction of a parking garage even though it will be in competition with a proposed privately-operated garage.

The decision may set the pattern for future public construction operated in competition with private enterprise in Pennsylvania.

The Pennsylvania Supreme Court gave the go-ahead to the parking authority to construct the $1.5-million, 496-car garage, thus affirming the decision of Common Pleas Judge Gerald F. Flood, who previously dismissed a suit contesting the authority's right to build the garage.

The Nine-Ten Chestnut Corporation, which brought the suit, contended that the proposed authority garage would be in competition with its planned $1.5-million, 500-car garage a block away.

The corporation said it purchased the site in 1950, but because of the shortage of materials was unable to start construction.

Judge Flood ruled that the authority was an agency of the Commonwealth and had been given unrestricted rights to build parking facilities where it thought necessary. The court pointed out that the corporation at no time charged a violation of any constitutional provision, and its complaint was based solely on fact that authority garage would be in competition with its proposed garage.

"The duty to determine such matters is not normally imposed upon courts," Judge Flood said. "It is an administrative and not a judicial determination. The function of the authority demands that it be given a wide range of discretion."

It was pointed out that another private organization, had it acquired the site, could have decided to erect a garage in competition with the corporation.

The authority, which had held up the start of the project, gave the contractors orders to proceed with construction as soon as the supreme court announced its decision.

• **Seven-square-block garage**—Plans for a $9.5-million underground parking garage, with facilities for 3,760 automobiles in downtown St. Louis, Mo., were announced this month by the Bi-State Development Agency. Bi-State is the official body set up to build and operate public facilities in the St. Louis area in both Missouri and Illinois.

The proposed garage would occupy seven square blocks facing the Mississippi River between the downtown business district and an area that has been cleared for a riverfront park.

Financing would be through revenue bonds, to be retired by income from parking fees.

The plans, prepared by Milton M.

PHILADELPHIA GARAGE gets two more levels. The Elgin Garage, originally a one-story structure with parking on the ground floor and roof, added 58,000 sq ft of parking area at a cost of $260,000. Use of 3,000 psi lightweight concrete was big factor in permitting added floors.

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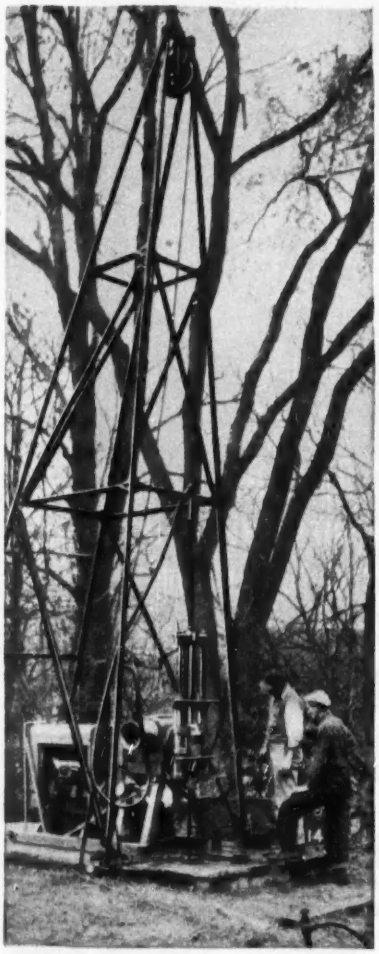

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Kinsey, agency engineer, and L. Roy Bowen & Associates, engineers, call for two levels over the entire length of the garage and three levels in a one block section.

An underground pedestrian walk would run along five blocks in the heart of the retail and office district. Show windows would be installed along the walk for rental to merchants.

Two of the seven entrance-exits planned would connect with the Third Street Expressway, now under construction as the first part of a projected system of radiating limited-access roadways intended to revitalize the downtown area.

• **Pittsburgh plans await appeal**—Four new parking garages are planned for downtown Pittsburgh, Pa., in the current year.

The city's parking authority said, however, that the construction program depends on getting permission from either the state legislature or the Pennsylvania Supreme Court to sell gasoline and repair autos in the new parking garages.

Wallace Richards, chairman of the parking authority, said no construction projects will be awarded until this thorny problem is settled.

The authority has two parking garages in which it had planned to service autos. The plan was fought in the Allegheny County Court by commercial garages and the decision was against the parking authority. The lower court's decision is now before the state Supreme Court on an appeal.

The four proposed garages would have a total capacity of 2,323 autos. They would be from five to seven stories high, and one of them may include facilities for a helicopter landing field on its roof, as well as a ground floor airport bus terminal.

The authority chairman said the future policy of his group will be to contract with firms which will both build and operate parking garages for long periods of time.

• **Chicago makes plans**—The Chicago Park District has awarded a contract to John Griffith & Son Construction Co. for $6.5 million for the construction of Chicago's first underground parking garage. This facility, which will accommodate 2,350 autos, will be built in Grant Park four blocks from the lake front.

About 22,000 cu yd of earth to be excavated on this site will be used as fill on the extension of the North Lake Shore Drive, according to Robert A. Black, Park District chief engineer. Work on the garage will begin about March 1 and is expected to be finished in 675 days. The garage will have two levels and entrance and exit ramps off Michigan Avenue.

Five parking garages are planned for the loop area and four for the north side to accommodate a total of 6,169 autos following receipt by the mayor of a check for $21 million—fruits of the recent successful bond issue.

• **Three cities, four garages**—Plans for construction of two city-operated garages in downtown Denver, Colo., with a combined capacity of 970 autos have been announced. The 10-floor garages will be built at a cost of $818,000 each.

First municipal parking garage in Columbus, Ohio, will be a five-story reinforced concrete building with a capacity of 583 autos. The cost is estimated at $1 million.

A proposal to construct a $5-million underground parking garage in Toronto, Ont., which would accommodate 5,000 autos, depends on the city council obtaining the necessary land.

• **Legal problems**—The long-term solution to Nashville, Tenn., parking problems is a revised building code requiring that new buildings be designed to provide their own off-street parking, Dan Maddux, chairman of the city parking authority said recently.

The possibility of getting legislation during the current session of the North Carolina Legislature which will make legal the financing of off-street parking facilities with funds from parking meters is being explored by the North Carolina League of Municipalities.

The state Supreme Court recently ruled that revenue obtained from meters may not be used to finance off-street parking facilities.

Rail building started

Two phases of the Pennsylvania Railroad's expansion program for the Pittsburgh area were in the news last week.

Officials announced the beginning of construction on an umbrella-type trainshed, to be completed by year's end, and released news of construction plans for a $34-million freight classification yard at Conway, outside of Pittsburgh (ENR Dec. 18, p. 27).

In addition to the new trainshed, part of the railroad's $27-million Pittsburgh passenger terminal improvement program, new train platforms are being built.

Study air pollution in Detroit region

Detroit will send its air pollution control program into high gear during 1953.

Benjamin J. Linsky, head of the Detroit smoke abatement control bureau has announced that work will continue in the Detroit and Windsor, Ont., area.

In an effort to determine the effect of air pollution on public health, the second phase of an International Joint Commission study of the Detroit-Windsor area will get under way in the spring.

Dr. Allan Rabson of the United States Health Service will work with the Detroit bureau on the project. George W. Clayton, head of the technical advisory board for the Joint Commission, will direct pollution studies.

Proposed studies for 1953 include corrosion, vegetation and safety effects of air pollution. The study already has made possible new methods to control carbon and iron oxides from electric furnaces as well as odors from paint and varnish.

Anti-pollution board lists bay contamination

Parts of San Diego Bay are "grossly contaminated" according to a report issued two weeks ago by San Diego's Regional Water Pollution Control Board.

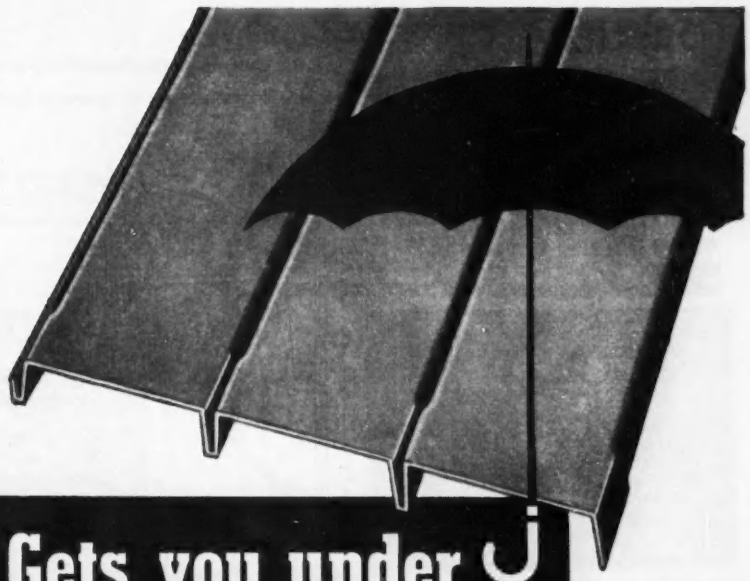
Other areas of the bay have oxygen concentrations approaching minimum acceptable limits with critical frequencies.

The control board recommends increasing present sewage treatment and removal of major discharges from the bay in addition to a long-term program for treating all raw sewage and major industrial wastes that are found in the bay area.

Banking by auto

Texas Bank & Trust Company of Dallas, Tex., two weeks ago revealed plans for a $1.4-million drive-in bank and parking garage adjoining the bank's 10-story building.

In addition to banking facilities, the 140,000-sq ft building will have space for 350 autos on the third, fourth and roof floors. Contract for construction is expected to be let about March 1, with completion scheduled by the end of the year.



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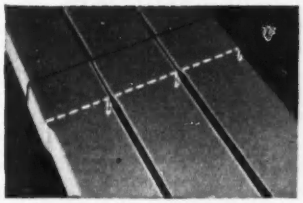

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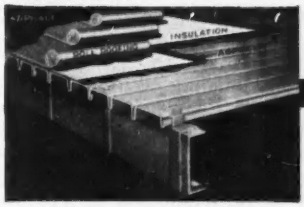

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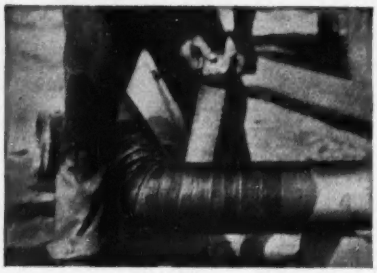

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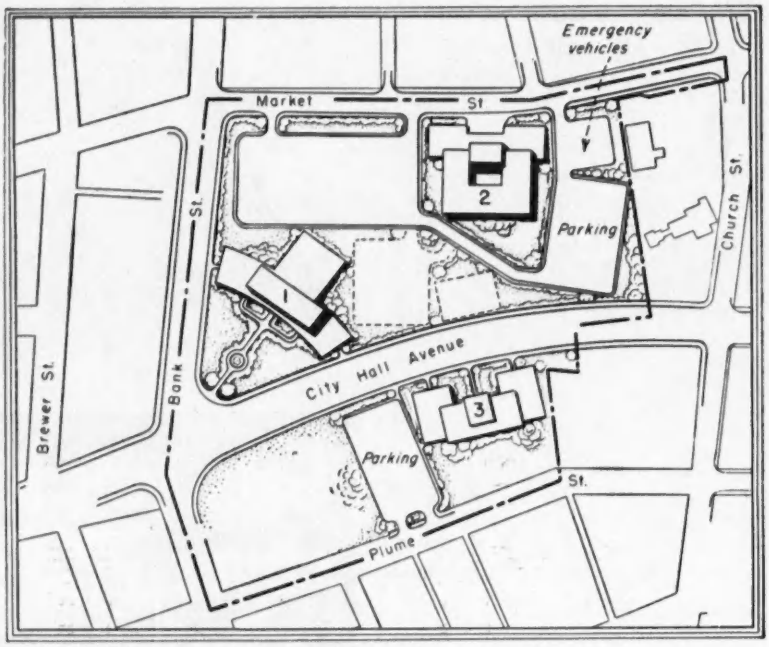


CIVIC CENTER planned for Norfolk, Va., will cost about $6 million.

Plan $6-million civic center

Norfolk, Va., municipal focal point will house all major civic activities in single area

Preliminary plans for a downtown civic center in Norfolk, Va., were recently announced by the Norfolk City Planning Commission.

The center would provide new municipal, court and jail facilities and is estimated to cost about $6 million.

A public hearing on the project will be conducted this month with action by city council to follow.

The center would be constructed on land which is now used partly by the city and partly by types of business and industrial structures which the commission characterized as: "of a gradually declining nature."

First building to be erected would be one to house the city jail, police headquarters, police and traffic courts and the Naval Shore Patrol headquarters. Estimated cost is $1.4 million, not including space for the shore patrol.

Second building would be an 8-story municipal building, which would be the central structure. It would provide about 84,000 sq ft floor space for municipal offices to serve an estimated future population of 350,000. Particular emphasis would be placed on first floor design to provide efficient working space for services that contact the public daily (taxes, licenses, water bills, etc.). Cost of this building is estimated at $1.5 million.

The third structure would be the court house, occupying space now covered by the jail and police headquarters. This would house five courts.

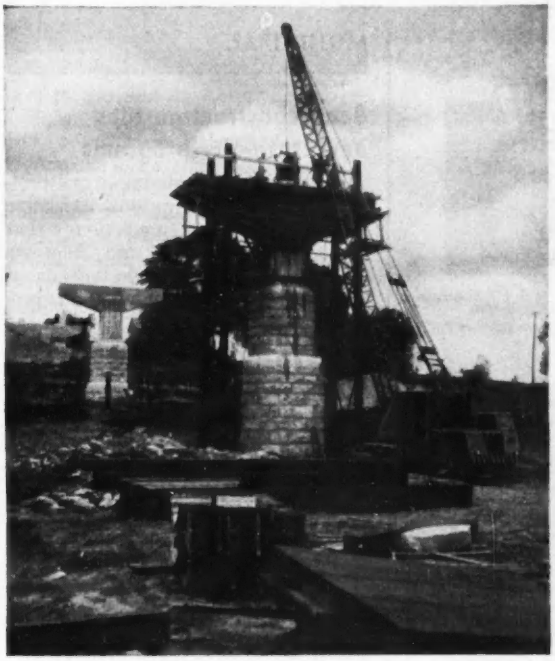
The present court house would not be razed. It is a classic structure, built in 1847 and would be a museum.

The commission says that the new court house should have a minimum of 39,301 sq ft with an area of 50,597 sq ft to serve the future population. Cost is estimated at about $900,000.

Cost of the land acquisition is estimated at about $2 million. There are 11.36 acres in the area of which the city already owns 1.56 acres.

The building costs are estimated for vertical block-type construction with a minimum of ornamentation, and custom design masonry. The final design, however, will await consultation with architects after the go-ahead signal is given.

The 1950 census gave Norfolk a population of 213,000. This did not include a large suburban area adjacent to the city limits and which the city proposes to annex. This could add 50,000 or more to the population.



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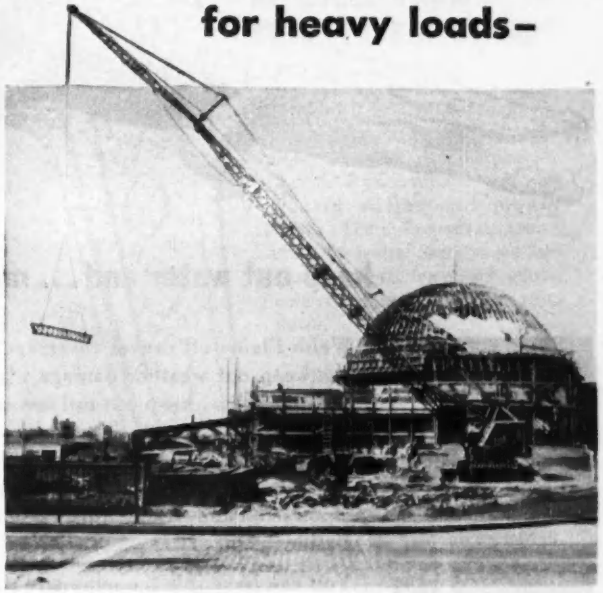

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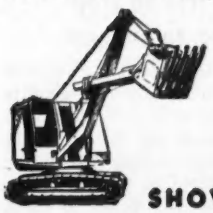

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PROTECTION

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FLAMEFOIL GUARDSMEN

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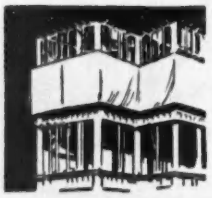

Webb Flamefoil canvas coverings keep out fire . . . keep out weather damage where you store equipment . . . keep out mildew and dust from machinery and tools. They're made from top quality canvas of any weight. Hems are double-lock stitched. Heavy reinforcements at all points of abrasion and strain. Sturdy grommets provide bulldog grip.

You can have this economy and protection in a Webb Flamefoil-treated tarp of any size, any specifications for every protective use. Also available—windbreakers with plastic windows for winter weather operations. Write for information and prices.

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MUNICIPAL

Road construction tops new state-city programs

A sampling of state-municipal projects pouring into various legislative hoppers confirms predictions that highway construction and improvement will be high on the agenda of many government construction programs:

In Westchester County, New York, County Executive Herbert C. Gerlach, in his annual report, told the Board of Supervisors that $100 million in state highway construction will be started within the county this year. The principal items in this program are sections of the New York-Buffalo Thruway and its Tarrytown-Nyack Bridge across the Hudson River, and the New England Thruway—coupled to reconstruction of the lower end of the Bronx River Parkway near N. Y. City.

All contracts on the New York—Buffalo Thruway are scheduled for award before April 15. Gerlach also told the board that the Sprain Brook Parkway, from Bronxville to the Hawthorne Circle, should be started this year.

In Knoxville, Tenn., Mayor George R. Dempster said that he hopes to see completion of the Magnolia Extension, an expressway linking Tulip Street with Kingston Pike. The contract for this state-federal-city project should be let by spring. Other Knoxville work includes widening of Broadway and the launching of the Marion Street Extension. The mayor is planning conferences on these projects with the new state administration which takes office this month.

Among the major municipal matters slated for debate in the general assembly at Harrisburg, Pa., is the allocation of $15 million in state subsidy payments to local governments for road work. The 1953 legislature may make revisions in the old formula for allocation of the funds which would provide for $12 million to be distributed, 60% on the basis of mileage and 40% on the basis of population. The additional $3 million would be disbursed on the basis of mileage only.

Schenectady trys to stop business trend to suburbs

New York State Housing Commissioner Herman T. Stichman recently disclosed that Schenectady had been chosen as a "guinea pig" by the state division of housing to show that public funds with the help of private enterprise can "reverse the trend of busi-

ness to the suburbs."

A state sponsored slum clearance and urban redevelopment program, embracing seven acres in the heart of the downtown section, will be carried out with a $725,000-fund set up by the state as part of a $4-million loan with which the Schenectady Municipal Housing Authority erected a 310-unit public housing project in 1949.

In boosting the clearance fund from its original $500,000, Stichman explained that without the additional funds it would have been necessary to sell the cleared land piecemeal to obtain sufficient funds to buy further properties in the site, preventing an integrated plan of redevelopment.

Nearly 100 buildings will be purchased and demolished, and the land will be put on the market at "marked-down" prices, the remainder to be turned over to the city for parking facilities.

The city plans to clear a similar tract adjoining the 7-acre site and an application for a $525,000-grant-in-aid under the Federal Housing Act of 1949 is now being processed for the work.

Beach reclamation project washing out to sea

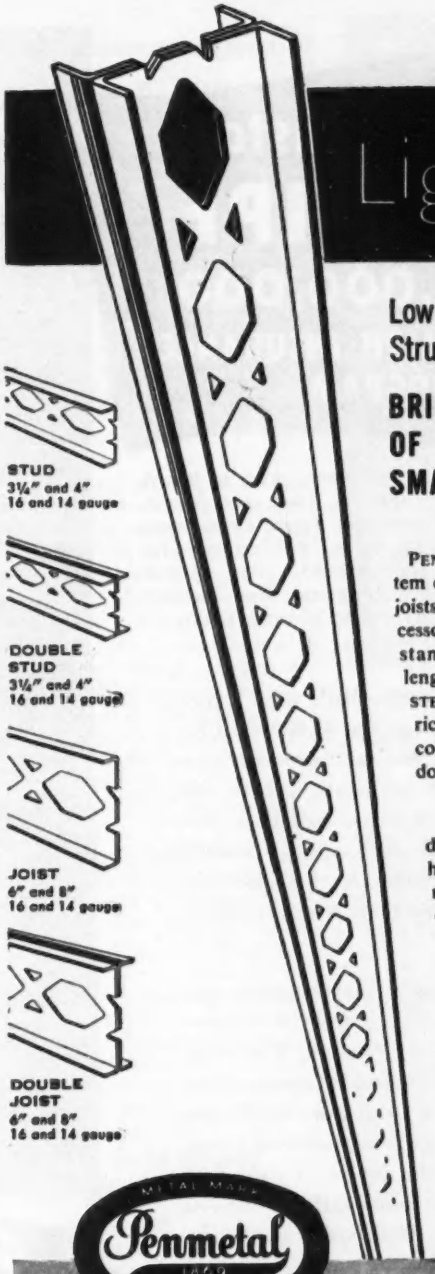
Ocean City's $5-million reclamation of its famous resort beach (ENR June 19, 1952 p61) is slowly being washed out to sea. The project was undertaken to solidify the gradually declining value of the New Jersey city's important beach-side resort real-estate. At least $200,000 worth of the more than a mile of new ocean front has disappeared.

The prevailing northeast winds of fall and winter, causing the waves and current of the Atlantic to run laterally along this stretch of shore, have washed away thousands of yards of the sand put down last summer by two hydraulic dredges pumping from near-by Great Egg Harbor Bay.

Local planners believe that much of the sand washed away in the fall and winter will be restored from the sea by the southerly and westerly winds that prevail from late March to September.

However, state engineers have recommended lengthening the series of stone jetties extending into the ocean along the restored area to build up adequate protective and holding power against the northeast winds.

Opponents of the project, who called it as a "big gamble" are now sure it is a losing one, but former enthusiasts and the city commissioners are keeping a stiff upper lip and their faith in the spring and summer winds.



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Evansville Installs CLAY PIPE IN $5,000,000 "URBAN HEALTH INSURANCE" PROGRAM

Over 50,000 newcomers to booming Evansville, Ind., get permanent sewerage facilities as more than 37 miles of Vitrified Clay Pipe are installed under a bond-financed program that includes the city's first sewage treatment plant.

"Urban Health Insurance"—that's what Evansville, Ind., newspapers call the $5,000,000 Clay Pipe sewerage project that will serve the new homes, schools, and hospitals within the expanding city limits. Defense industries have drawn more than 50,000 people into Evansville in recent years. The 200,000-foot Vitrified Clay Pipe installation provides them with *permanent* sewerage protection.

Clay Pipe is first choice of city engineers and building contractors all over the country, because it's *guaranteed for 50 years.* Clay Pipe can't be corroded or weakened by strong detergents, corrosive fluids, sewage gases, or electrolytic soils. It never "ovals" or squashes out. And it meets the needs of the future . . . can't be affected by wastes from home garbage disposal units or new industries. Whenever you specify, buy, or install sewer pipe, be sure it's Vitrified Clay — the pipe that *never wears out!*

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D-153-3

Baltimore redevelopment gets $3 million

Minneapolis seeking $80,000 to advance plans for a $30-million redevelopment project

Baltimore, Md., has been allotted $3,373,861 in federal funds for the big Broadway redevelopment project, involving slum clearance west of Johns Hopkins Hospital, Mayor Thomas D'Alesandro announced last week.

Already Baltimore's Redevelopment Commission has bought up 70% of the 867 parcels in the project area, and many wornout buildings have been razed.

A portion of the project area will be the site of new elevator-type apartment buildings to meet housing needs of the Johns Hopkins medical institutions.

In the part of the area adjacent to Dunbar School and the Chick Webb recreation center, rental housing units and playgrounds for Negroes are planned.

And in the same area there will be a new health building to be operated by the Health Department.

The Broadway redevelopment area is bounded by Broadway on the east, Orleans Street on the south, Central Avenue on the west, and Monument Street on the north, and covers more than 12 blocks.

Coupled with the $1,115,807 grant to the city a few weeks ago for the Waverly redevelopment (vicinity of Greenmount Avenue and Twenty-Ninth Street), the new allocation assures speedy progress on two important projects, Mayor D'Alesandro said.

In addition to the federal funds, the Redevelopment Commission has a $5-million city bond fund at its disposal.

• **Minneapolis program**—Acquisition of land and buildings for the public housing portion of the $30-million Glenwood redevelopment and housing project in Minneapolis, Minn., is scheduled to start this month or next.

A. C. Godward, executive director of the municipal housing and redevelopment authority, told the Minneapolis city council housing committee that the authority's plans will be in shape to begin such a move.

Purchase of property for the redevelopment and private enterprise phase of the project may start next July or August, he said.

The area involved includes about 60 square blocks, with a portion of it adjacent to the Sumner Field Housing Project, a federal unit that has been in operation for nearly 15 years.

The extreme eastern section of the area will be developed for commercial and industrial purposes and will include land surrounding the municipal market, Godward said. Of the remaining area it will be divided roughly half and half between public and private housing, with the entire area expected to accommodate between 1,500 and 1,600 families.

The general program calls for investment of $24 million in private capital and $6 million in public funds. The city is expected to receive taxes of about $308,000 yearly from the private property and $20,000 yearly from the public property in lieu of taxes.

With preliminary plans finished, Godward said the housing authority is seeking an $80,000 advance from the federal government to finish plans for the redevelopment, including commercial and industrial phases of the project. The city council must approve the request to the federal government.

• **Cleveland public housing**—Cleveland city council's legislative committee voted not to refer an ordinance banning all future public housing to the council. Instead the committee decided to hold more hearings on an ordinance which would bar public housing in city areas not designated as blighted. This would permit construction in many neighborhoods but ban it from the Lee-McCracken Road area, where a 900-unit project is planned.

New zoning rule in Denver eliminates setback problem

Denver's city council has passed a new zoning resolution permitting the construction of box-type skyscrapers in the city's downtown commercial zone. Specifically, the new move will permit the construction of a $15-million, 20-story office, retail and transportation center on which work is to start this spring (ENR Dec. 18, 1952, p. 48).

Former ruling for the downtown zone called for a 1-ft setback for every 3 ft of height over an optimum basic height of 150 ft. The new rule eliminates the setback as long as the floor area of any story over the optimum 150 ft is not greater than one-fourth the area of the lot on which the structure is built. The new commercial center's main building will be 265 ft high with no setbacks.

HOW TO HANDLE
WET JOBS

#14 of a Series

EDIFICIO MARQUÊS
do HERVEL
Rio de Janeiro, Brazil

BRAZILIAN JOB HANDLED
WITH WELLPOINT PLAN

IN THE HEART of busy Rio, digging is shown under way for basement and sub-basement of a retail establishment. The job was sizeable and posed very sizeable pre-drainage problems for one of South America's leading contractors.

• First, there were buildings or streets on all 4 sides of cut (see photo). Second, subgrade lay 27 ft down, with 21 ft of water in the way. Third, the soil was highly heterogeneous: layers of fine sand, silt and mica being sandwiched in-between hard clay strata, so that intensive piping (through the sand layers) was obviously in the cards.

• For 10 years this foreign contractor, like others, has relied on Griffin. The 2-stage wellpoint system used in this instance was designed to stabilize the soil and provide insurance against subsidence of existing structures. For "quick-dry" . . . specify . . . Griffin.

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Here's how Dewey and Almy

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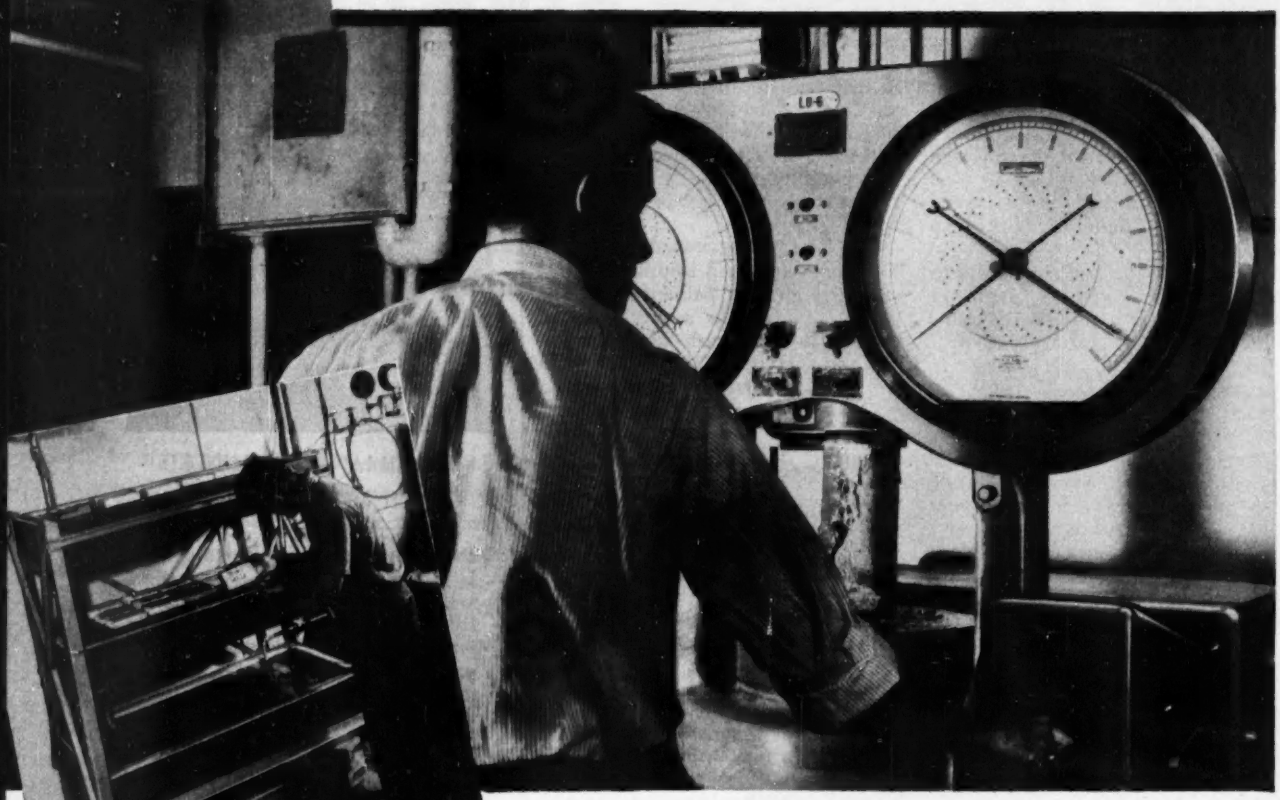
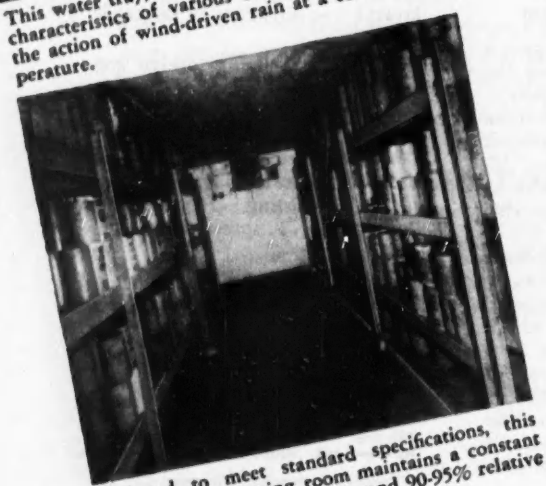


This water tray, used to test the water-absorption characteristics of various concretes, can simulate the action of wind-driven rain at a constant temperature.



Designed to meet standard specifications, this moist or "fog" curing room maintains a constant temperature of 23°C. (±1°), and 90-95% relative humidity. Capacity, 4000 cylinders.

Pour more durable concrete today. *Use* concrete in valuable new ways. *Place* it faster and easier. *Cure* it more conveniently. Or, *grind* raw material and cement clinker more efficiently, at greater, more economical production rates.

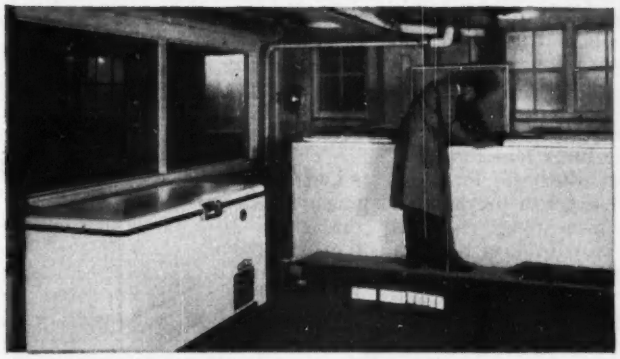
Dewey and Almy research helps the cement and concrete industries do all these things, and more.

Each Dewey and Almy construction product is a result of never-ending research and quality control in one of the most extensively equipped private laboratories in the cement and concrete industries. Facilities include cement grinding mills; ingenious mixers that simulate large field mixers; aggregates and cements from all over the world; freezing equipment to test frost action in both small and field specimens; sonic apparatus for non-destructive testing; specialized equipment for controlling the characteristics of various types of hydraulic cement; every practical tool and test needed for evaluating formulations, mixes, and aggregates.

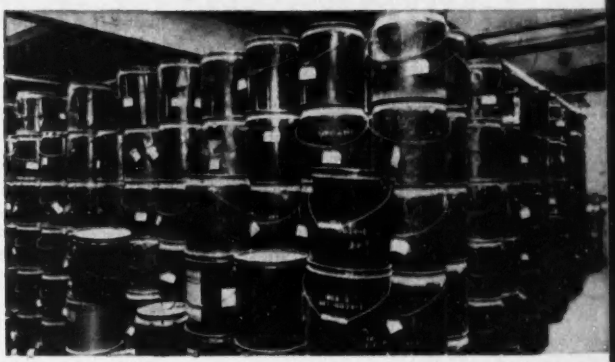
Practical research on an industry-wide scale is one reason why Dewey and Almy construction products consistently prove superior where it counts most — *in the field, on the job.*

helps you get better concrete

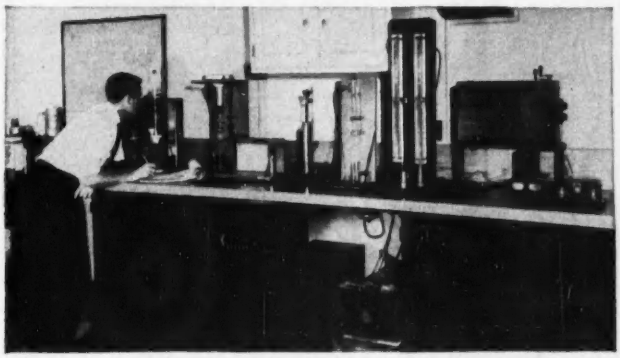
proving-ground that mirrors field conditions



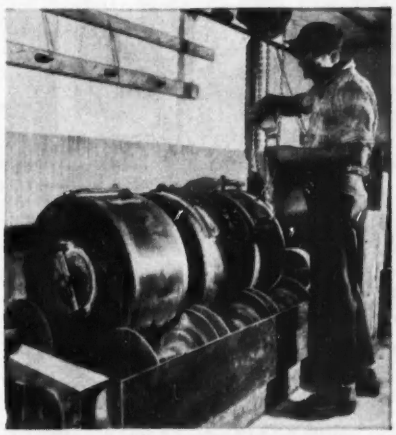
At left above is a small freezer (minimum temperature −18°F) for experimental freeze-thaw cycles. At right is a constant-temperature box that can be controlled within 1/10° in a range of 60-200°F., under various wind and humidity conditions.



Over 1500 different samples of cement and aggregates from almost every state, as well as many foreign countries, are available for tests.



Even more important than the wealth of evaluating apparatus in Dewey and Almy's laboratory at Cambridge, Mass., is the specialized experience of the engineers who translate test results into practical improvements.



Dewey and Almy research virtually re-creates the portland cement industry in miniature, from raw material grinding to finished cement. This battery of cement mills tests and evaluates hydraulic cement grinding aids.

Write for Factual Information on any of these Dewey and Almy Products for the Construction Industry

DAREX AEA • World's most widely used brand of air entraining agent. Concrete made with DAREX AEA places easier, finishes faster and better has finer surface texture, is many times more durable when exposed to freezing and thawing, sea water or sulphate action.

DARASEAL • Creates a "membrane" film which keeps water in new concrete for better and more complete curing.

TDA • A catalyzing grinding aid for cement mills. Increases grinding rates of Type 1 cement 15 to 20%; of Type 2 cement 20 to 25%; of Type 3 cement 25 to 50%.

MTDA • Offers grinding rate increases similar to TDA. Used with clinkers that are not usually susceptible to TDA's dispersing action; or with excessive grinding mill temperature.

AIRALON • A ready-to-use air entraining agent and plasticizer that contains the saponified resin acids and fatty acids necessary to make a superior masonry cement.

RDA & MRDA • Grinding aids especially formulated for making oil well cement.

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Vast hydro scheme beckons U. S. contractors

W. A. Dexheimer
Assistant Chief Construction Engineer
Bureau of Reclamation, Denver, Colo.

Australia's Snowy Mountains Hydroelectric Authority will be seeking U. S. contractor interest this year in one of the largest, most spectacular power and irrigation projects in the world today.

Plans and specifications nearly ready for issue to interested contractors include a 14-mile, 21-ft diameter tunnel; a 300-ft-high- concrete dam; a 320,000-kw underground power plant, and a separate 2-mile tunnel of 21-ft diameter.

The type of contract to be used has not been determined, but this is sure: There are no contractors in Australia equipped or experienced for work of this magnitude; overseas contractors will be asked to bid, and U. S. firms interested in getting established in Australia with their own equipment for continued work of this kind are especially sought.

• **Big project**—The Snowy Mountains project—estimated to cost upwards of $450 million—is a trans-mountain diversion of coastal rivers to Australia's dry interior. It will provide hydroelectric power capacity of about 2,860,000 kw and make available 2,100,000 acre-ft of irrigation water per year.

The project involves construction of 7 major dams, 86 mi of tunnels, 490 mi of collecting canals and channels, plus 16 power plants.

The work is located in the states of New South Wales and Victoria in the Snowy Mountains area of the Great Dividing Range and some 60 miles south of Canberra, capital city of the commonwealth government.

Construction started on access roads, camps, and other facilities in 1949 and has been continuing since that time.

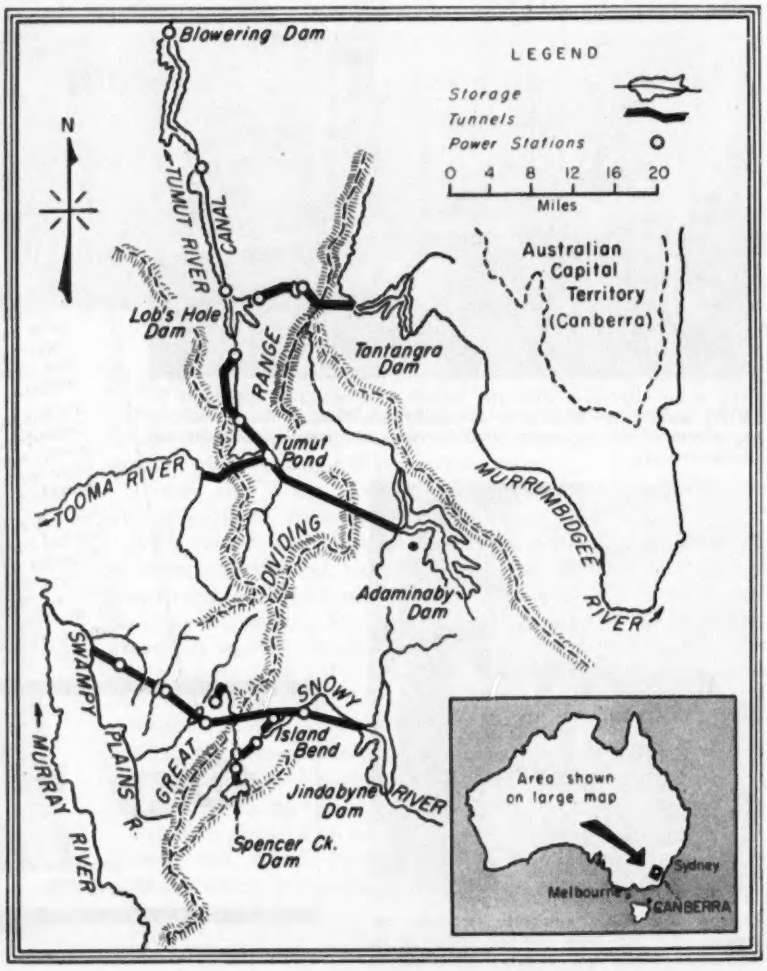
The first construction contract for permanent works was awarded to the Selmer Company of Oslo, Norway, under a negotiated contract covering both design and construction. This work is at the south end of the project on the upper Snowy River at its confluence with a tributary (see map). It includes a concrete overflow storage dam about 100 ft. high, a pressure tunnel about 3 miles long with 1,500-cfs capacity, a surge tank, plate steel penstocks, and a power plant and related facilities for three 30,000-kw units operating under a normal head of 820 ft.

Two of the turbines and generators are scheduled for delivery by the English Electric Company next September; the Selmer Company is to have the power plant ready for installation of equipment as it arrives.

The entire Snowy Mountains project (which may take 20 more years to build) includes three trans-mountain tunnels, two of which are for diversion of coastal rivers to the interior. In general, the main storage reservoirs will be on the coastal side of the high mountains, where the more feasible reservoir sites are to be found. Inland, the topography is extremely rugged. Rivers drop precipitously down narrow, steep canyons until they reach the flat plains—a comparatively short distance from their source.

Large storages inland would be prohibitive in cost. However, the precipitous fall there is ideal for development of hydroelectric power, utilizing high heads and comparatively small quantities of water. Storage for reregulation to meet irrigation demands is to be provided at lower elevations where the valleys widen just before the rivers enter the plains.

• **Large tunnel** – The initial trans-mountain diversion is to be made through a 21-ft ID, concrete-lined tunnel, approximately 14 miles long, from Adaminaby Reservoir to Tumut Pond. Plans and specifications for this tunnel are to be issued early in 1953 and bids are to be submitted three to four months later. Construction is to start by next October with



Gouging out a Bolivian Mountain *needs sound insurance protection!*

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The American Foreign Insurance Association through its 24 outstanding member companies provides them with sound foreign insurance protection of practically every type except life. This protection includes fire, explosion, windstorm, lightning, liability, workmen's compensation, personal injury, accident, ocean and inland marine and many others. It not only is fitted to the requirements of the projects but conforms precisely to the insurance laws and regulations of the countries where they exist . . .

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about four years to be allowed for completion.

The Adaminaby-Tumut tunnel normally will carry water from Adaminaby Reservoir to Tumut Pond, but flow will be reversed at times when there is a surplus of water in Tumut River for storage in Adaminaby Reservoir. A shaft is to be dug at the point where the tunnel line crosses under the upper Tumut River, for taking surplus flows into the tunnel. This shaft will be located 4 mi from the Tumut end of the tunnel and will be 287 ft deep. The shaft and intake control gates will provide for a maximum of around 8,000 cfs flow into the tunnels.

Near the downstream portal of the tunnel at Tumut Pond a control gate is to be operated under unbalanced head of about 373 ft on its one side and 233 ft on its other. This gate will be the main control of flow in the tunnel under various operating conditions.

An unlined access tunnel, 4,500 ft long and connecting to the main tunnel on the Adaminaby side of the main control gate, will provide gravity drainage of the downstream heading of the main tunnel, access to the tunnel when Tumut Reservoir is in operation, and an outlet for disposal of tunnel excavation downstream from Tumut Pond Dam.

• **High dam**—A concrete arch dam 300 ft high with gate controlled spillway is to be built on the Tumut River near Tumut Pond. The reservoir formed will regulate flow for the first of a series of hydroelectric power plants to be built along the Tumut River. Plans and specifications for the dam are expected to be issued early this year with actual construction scheduled to start by October.

This work will include roughly 140,000 cu yd of rock excavation, 193,000 cu yd of concrete, 300 ft of tunnel, an intake structure for a 21-ft dia power tunnel, plus the spillway and outlet works. Concrete aggregates may be manufactured from basalt rock a few miles from the site, and sand is obtainable from natural deposits 9 mi away.

Additional work to be advertised very soon will include excavation and concrete lining of 2 miles of 21-ft diameter tunnel from a short tunnel under the abutment of Tumut Pond Dam to, and including, the surge tank for a power plant below. This tunnel probably will require excavation from the surge tank upstream to avoid interference with work on Tu-

THE ENGINEER'S REPORT

DATA

LUBRICANT RPM Tractor Roller Lubricant

UNIT Track bearings — Caterpillar D-8

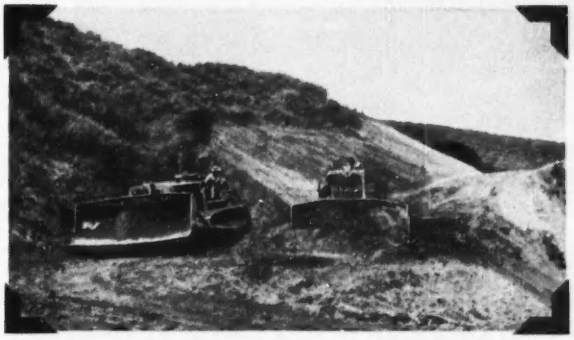
CONDITIONS Building roads to oil wells — side-hill operation, grit, sand

PERIOD 5,000 hours

FIRM Bennett Murray, Inc. Newhall, Calif.

Track-roller bearings go 5000 hrs. in tough work!

WORKING IN MUD, GRIT, AND SAND, a D-8 Caterpillar like this, lubricated with RPM Tractor Roller Lubricant, went 5000 hours without replacement of a single track bearing; during its two years of operation in all kinds of service, only the tracks were changed. Eight D-8's are used by Bennett Murray, Inc., Newhall, Calif., to build roads into oil well locations. Despite much steep, side-hill work—and the fact that they sometimes operate in oil sumps full of chemicals—these dozers all get between 2500 and 5000 hours on a set of track-roller bearings.



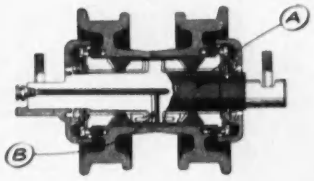
MAKING A CUT THROUGH A HILL is typical of the rugged work Bennett Murray equipment does in many parts of Southern California. Track bearings on all of their bulldozers are greased regularly with RPM Tractor Roller Lubricant.

REMARKS: There are three grades of RPM Tractor Roller Lubricant—Light, Medium, and Heavy—to meet all climatic and operating conditions in Caterpillar track-roller bearings. For Allis-Chalmers, RPM Tractor Roller Lubricant—A. C. Type is recommended.

RPM

TRADEMARK "RPM" REG. U.S. PAT. OFF.

How RPM Tractor Roller Lubricant resists wear in the toughest service



It flows evenly to all bearing surfaces, lubricates and retards rust formation.

A. Contains chemical anti-wear agent—maintains tough lubricating film.

B. Has stringiness compound—improved viscosity, resists leakage, helps keep protective grease seal outside bearings.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

STANDARD OIL COMPANY OF CALIFORNIA • San Francisco 20
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Presenting the New Cleaver-Brooks High-Temperature Oil Booster

"THE SENSATION OF THE EQUIPMENT SHOWS"

Heats faster, at lower cost

Heats to higher temperatures

Uses high temperature oil as the heat transfer medium

Engineered for long life — Strong and rugged

...for fast, low-cost heating of oils, bituminous and heavy viscous materials in tank-cars and storage tanks

DESIGNED AND DEVELOPED BY

Cleaver-Brooks

Builders of Equipment for the Generation and Utilization of Heat — Pioneers and Originators of Self-Contained Boilers, Tank-Car Heaters and Bituminous Boosters

USING a specially selected, high temperature oil as the heat transfer medium (no water or steam needed and operating at atmospheric pressure) the new Cleaver-Brooks High Temperature Oil Booster provides many time and money-saving advantages: — high-speed performance — no water, steam, or pressure problems — heats to higher temperatures — positive heat circulation — constant re-use of high-temperature oil medium — quicker shut-down and simpler operation — avoids weather problems — operates at lower costs and with reduced maintenance.

The High Temperature Oil Booster is a fully automatic, rugged, heavy duty heating unit, operating on the principle of a closed heating system. Unit is fired by pressure atomizing type oil burner. Self-contained — including pump, valves, piping, temperature and low level controls, electric motors and controls; complete unit mounted on a heavy channel iron base, ready for service hook-up. Available in two sizes of stationary electric-driven units — write for bulletin and complete information. CLEAVER-BROOKS COMPANY, Dept. B-393, E. Keefe Avenue, Milwaukee 12, Wisconsin.

mut Pond Dam. Disposal of tunnel muck will be along canyon slopes near the surge tank.

• **Underground power plant**—A proposed underground power station with an installed capacity of 320,000 kw may be ready for advertising early this year. This will include excavation for the station, for about a mile of tailrace tunnel, and for power tunnels connecting with the surge tank. It also will include: concrete lining of the plate steel penstocks in the tunnels, reinforced concrete construction of the underground power plant, and related items of work.

There will follow additional regulating and storage dams, tunnels, and power plants down the Tumut River. It is expected that specifications for this additional work will be issued in the next few years. The entire development will be a continuous construction program.

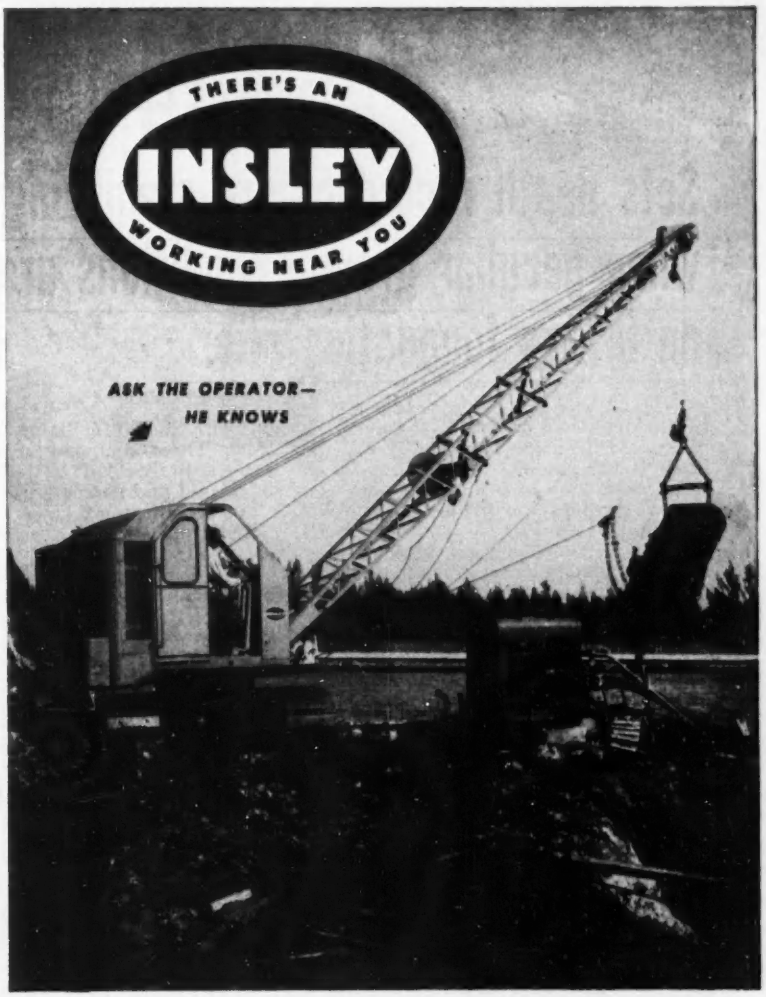
• **Much more work coming**—Investigation is being carried on for the second main trans-mountain diversion, planned to be much larger than the first. This one involves construction of a dam on the Snowy River near Jindabyne and 29 miles of main tunnel from Jindabyne to a tributary of the Murray—plus major power developments.

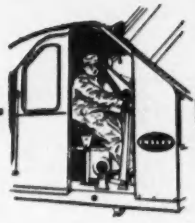
In spite of other recent power developments in Australia, the major load centers of Sydney and Melbourne are under "brown-out" conditions, and in some areas power is entirely cut off in sections of the city each night. Industrial development has been retarded for lack of essential power. There are very few hydroelectric developments in Australia and the Snowy Mountain project offers the best opportunity for such development.

Present power supplies are largely from steam plants using coal from the Newcastle area or from the low-grade brown coal deposits near Melbourne. Labor difficulties in the coal mines and in stevedoring have made the coal supply erratic and unreliable.

The Snowy Mountains Hydroelectric Authority is an agency somewhat similar to the Tennessee Valley Authority in the U. S. It was organized in June, 1949, and charged with the construction of the project. Up to the present time it has had adequate funds appropriated, and last year obtained a major part of requested funds while the state and other agency allocations were cut to 50 to 75%.

Recently Australia has stepped up its defense production and curtailed



The INSLEY operator  knows..

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INSLEY
BY THE USER—FOR THE USER

that Insley Equipment can be rated-for-the-project . . . he knows that specification alternates make it possible to buy the exact equipment to do his job best.

INSLEY MANUFACTURING CORPORATION • INDIANAPOLIS 6, INDIANA

14-in. U·S·S H-Pile

Sets depth record before stabilizing under 87-ton bearing when peculiar ground conditions are encountered on bridge foundation site.

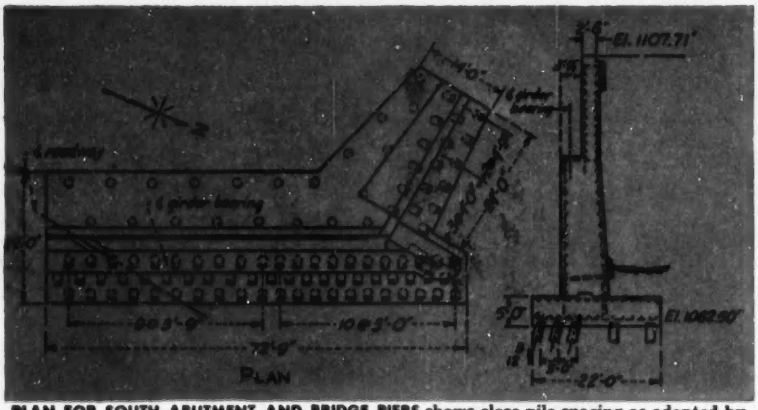
THE long pile is one of 199 closely spaced 14-inch, 102-lb. U·S·S Steel H-Piles in the south abutment of a five-span bridge on a highway relocation project near Meadville, Pa.

While pre-construction borings indicated a wide variety of ground conditions, as revealed in the data from two adjacent borings shown at the right, they gave little warning of what was encountered when actual driving began.

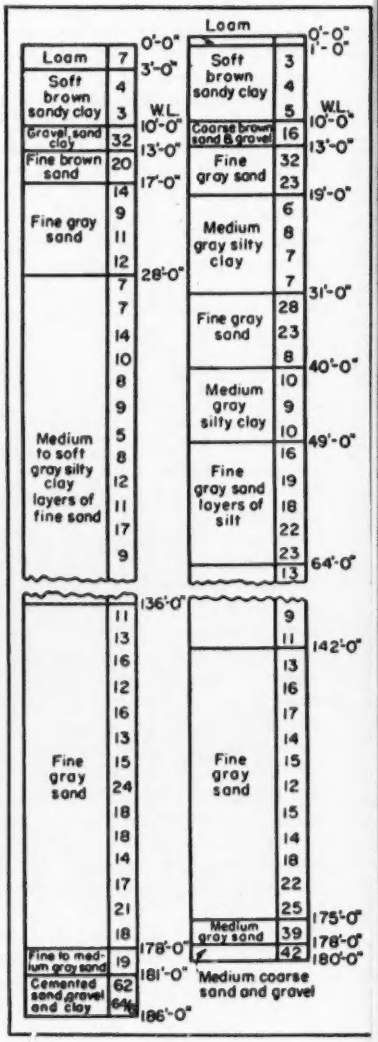
Differences of as much as 100 ft. in the depth of piles next to each other were obtained. The shortest H-pile in the closely spaced foundation area (see blueprint below) is 114 ft. The nearest in depth to the 304-ft. pile is 246 ft. long. Pile sections are 56 ft. long and were driven by a single-acting steam hammer with 26,000 ft. lb. energy per blow. Three diamond splice plates were pre-welded to lower ends of second and successive sections. The section was then set on the already driven pile and the splice completed.

The use of 4246 tons of U·S·S Steel H-Piles on this project is further proof of their ability to provide a secure means of supporting foundations in unstable materials at great depth. They are readily handled in the field by ordinary equipment, are easy to splice, eliminate jetting and withstand rough handling.

For more detailed information about the lasting safety and economy of U·S·S Steel Bearing Piles for every type of foundation job, contact our nearest office.



PLAN FOR SOUTH ABUTMENT AND BRIDGE PIERS shows close pile spacing as adopted by engineers of the Pennsylvania Department of Highways in order to obtain the increased bearing value needed to hold new embankment 35 ft. high.



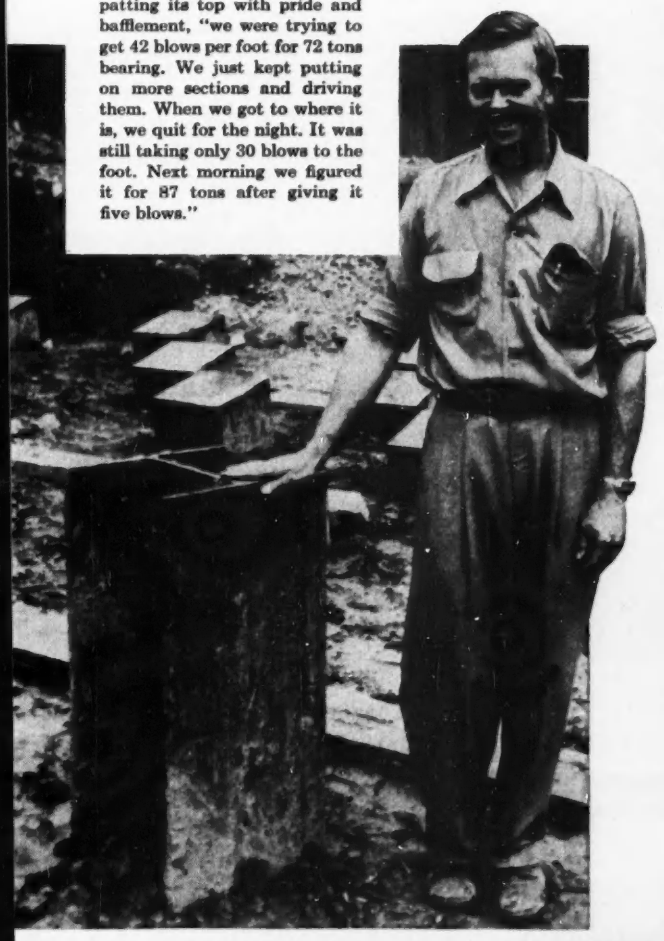
UNITED STATES STEEL CORPORATION, PITTSBURGH
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

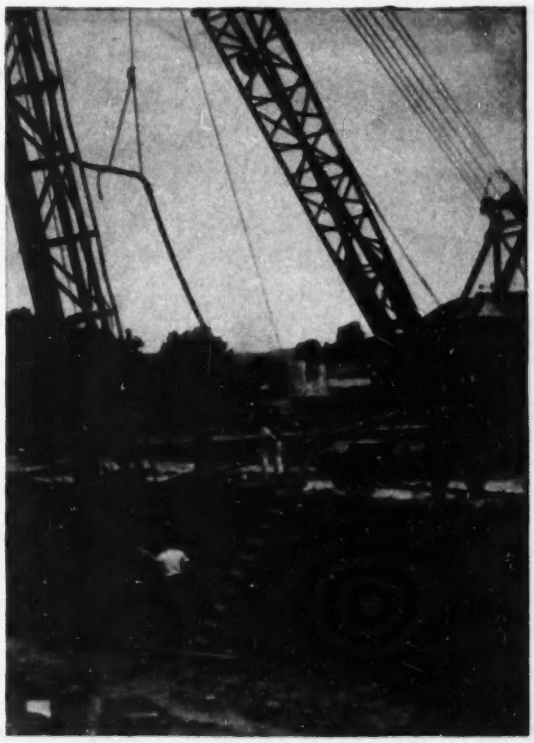
U·S·S Steel H-Bearing Piles

UNITED STATES STEEL

driven 304.3 ft.

"ON THIS 304-FT. pile," says S. A. Meyer, Superintendent for the contractor, S. J. Groves & Sons Company of Minneapolis, patting its top with pride and bafflement, "we were trying to get 42 blows per foot for 72 tons bearing. We just kept putting on more sections and driving them. When we got to where it is, we quit for the night. It was still taking only 30 blows to the foot. Next morning we figured it for 87 tons after giving it five blows."





PILES WERE DRIVEN by a single-acting steam hammer with 26,000 ft. lb. energy per blow. The hammer rides on 90-ft. rigid leads on a crawler crane with 80-ft. boom.

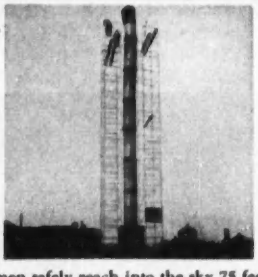
QUICK SPLICE of 65-ft. section was made by welders in 15 minutes. Three diamond splice plates were pre-welded to lower ends of second and successive sections. The section was then set on the already-driven pile and welders went to work.

BUILD PROFITABLY and SAFELY with Safway tubular steel scaffolding—first in the field

SAFE SCAFFOLDING MEANS FAST, ECONOMICAL BUILDING. Safway scaffolding is safer in more ways than any other scaffolding you can mention. Thousands—yes, thousands—of construction firms, contractors, industrial firms are using millions of dollars worth of Safway scaffolding to speed their construction projects safely and efficiently.

For more information contact the Safway representative in your city, or write to Safway Steel Products, Inc.

Tower of Strength



Workmen safely reach into the sky 75 feet high. They're using Safway scaffolding to dismantle a heavy steel stack in Minneapolis. Safway carbon steel frames are solidly joined with *wing nuts* to tubular steel cross braces for strength. All welds are made by master welders.

Corrosion Resistant

Weather and corrosion won't hurt the Safway scaffolding used in this 185 foot ski slide in Los Angeles. It's corrosion and rust resistant. Special phosphate bath converts surface of Safway steel scaffolding to non-metallic oxide. Baked-on weather resistant paint gives extra protection.

Assembled to Fit Contours

Standard Safway equipment is easily assembled to fit the curved bow and sloping sides of this vessel at the U. S. Navy yards. Only a few basic types of interchangeable members are needed to assemble scaffolds of any required shape and height.

Time-Saving and Safe

No wonder builders like balanced Safway steel scaffolding! It's engineered for structural stamina. Easy-to-assemble units speed erection of scaffolding and make dismantling simple. Pictured here is the lowest cost steel scaffold on the market for loads up to 50 lb. per sq. ft. with heights up to 40 ft.

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6225 West State St.
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Manufacturers of Tubular Steel Scaffolding and Equipment

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many major non-defense developments. But work is being pursued actively on the Snowy Mountains Project, regarded as essential to the build-up of Australia's productive capacity.

• **USBR cooperating**—Some design work for initial parts of the project is being done in Denver by the Bureau of Reclamation under agreement between the Commonwealth of Australia and the U. S. Department of State. The Australian government has sent groups of engineers to the U. S. for training and work on the project under bureau supervision; there has been an average of 12 Australians with the bureau since last January, and during 1952 a mission of bureau engineers led by the author investigated the Snowy Mountains area.

After the initial work has been started, the Snowy Mountains Authority expects to be in a position to do its own designing. The rush to get construction under way made it necessary to get outside assistance on work to be started in 1953.

J. L. Savage has been retained as a consulting engineer on the project (ENR May 1, 1952, p. 59). The Commissioner of the Snowy Mountains Project is W. Hudson, who with two associate commissioners is responsible to the commonwealth government for development of the project and its construction. The commissioner's address: W. Hudson, Box 4900, GPO, Sydney, Australia.

Bids in for $13.6-million Venezuelan rail line branch

Three Venezuelan construction firms have submitted bids to the Autonomous State Railroad Institute for construction on the first section of the $13.6-million railroad to link Barquisimeto and Puerto Cabello.

Included in plans for the 318-mi line are 26 bridges and 11 passenger and freight stations.

Venezuela has only two narrow-gage lines, unequipped for heavy freight.

International brief . . .

• **Europe's steel production up**—Crude steel production in Europe established a new record last year. It exceeded by about 9% the output of 1951, the previous best year, according to estimates of the Secretariat of the United Nations Economic Commission for Europe. Pig-iron production totaled 53 million tons in the first three quarters of 1952, compared with 49.1 million for same period of 1951.

Recently, The Consolidated Edison Company (in New York City) faced this problem: It had to produce a direct-process print from each one of more than ten thousand Brooklyn Underground Record Maps, showing the distribution system of electric service.

But satisfactory prints could not be produced directly from these maps. They were up to 30 years old . . . had been referred to constantly . . . and as a result were soiled, stained, creased, and "dog-eared."

What to do? Retracing was out of the question, since it would take a draftsman from two to three days to trace and check just one of these 17″ x 25″ drawings.

Kodagraph Autopositive Paper was the speedy, economical solution

With this revolutionary photographic intermediate paper, approximately 40 sharp and clean "duplicate originals" could be turned out in an hour. *Yes, 40 in an hour* because Kodagraph Autopositive Paper produces positive copies directly—without a negative step, without darkroom handling. At the same time, it drops out stains, creases . . . cleans up backgrounds . . . transforms weak detail into dense photographic black lines. Furthermore, Autopositive Paper can be exposed in standard print-making equipment . . . and processed in standard photographic solutions.

Thus, Consolidated Edison obtained—*in record time and at minimum cost*—a complete set of duplicate originals, which were used to produce the required direct-process prints . . . and were then filed away for future reference work and print-making needs.

Kodagraph Autopositive Paper

"THE BIG NEW PLUS" in engineering drawing reproduction

Learn in detail all the ways you can save with Kodagraph Autopositive Paper—the revolutionary photographic intermediate material which you, or your local blueprinter, can process *quickly . . . economically . . . at low cost.* Mail coupon today for free booklet!

EASTMAN KODAK COMPANY
Industrial Photographic Division, Rochester 4, N. Y.

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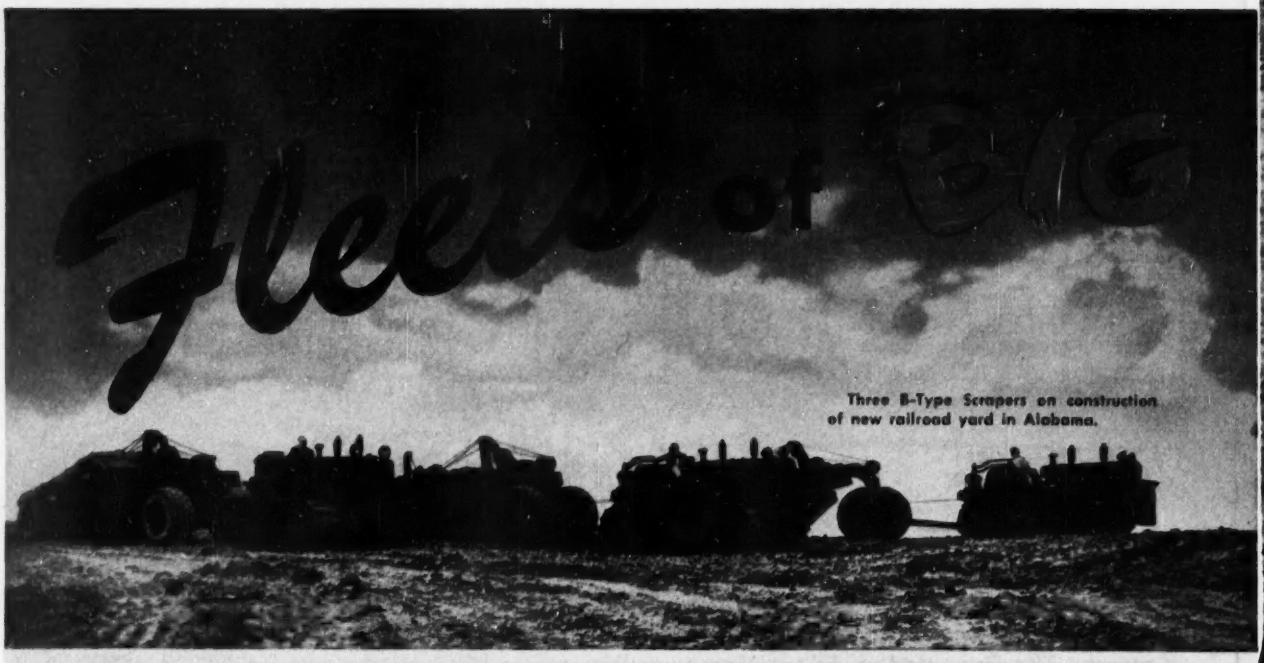


Three B-Type Scrapers on construction of new railroad yard in Alabama.

are cutting dirt-moving costs

EVER notice how many Big Red Teams there are working in *fleets?* One of these Bucyrus-Erie Scraper and International TD-24 Tractor combinations sells another — and another, and another. Such repeat orders placed by satisfied owners are the best possible endorsement.

Why not do as others have—arrange for competitive tests between the Big Red Team and any other dirt moving combination? You will see for yourself that B-type Scrapers *load faster, in shorter distance* — that they get *bigger loads* with or without pushers — that they *haul more dirt, move it cheaper.* Ask your International Industrial Tractor Distributor for details. 16T52C

BUCYRUS-ERIE CO., South Milwaukee, Wisconsin

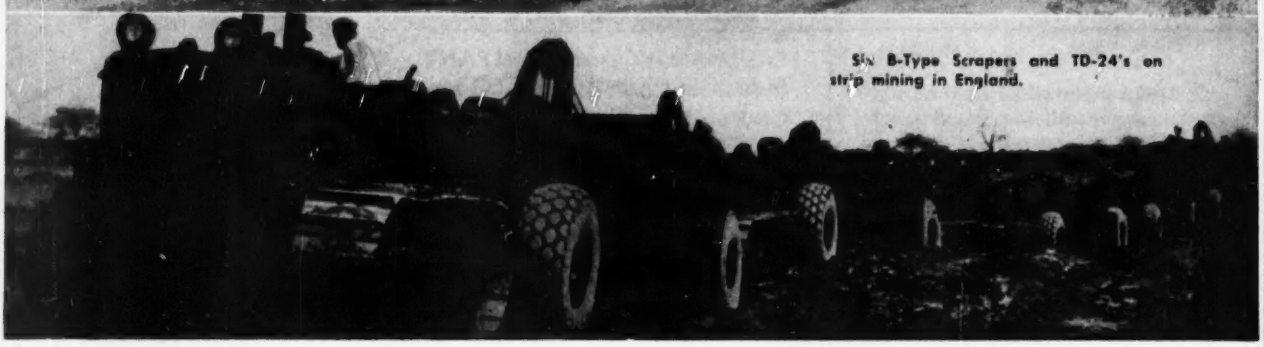
B-250

Scrapers—22 yd. (struck measure)

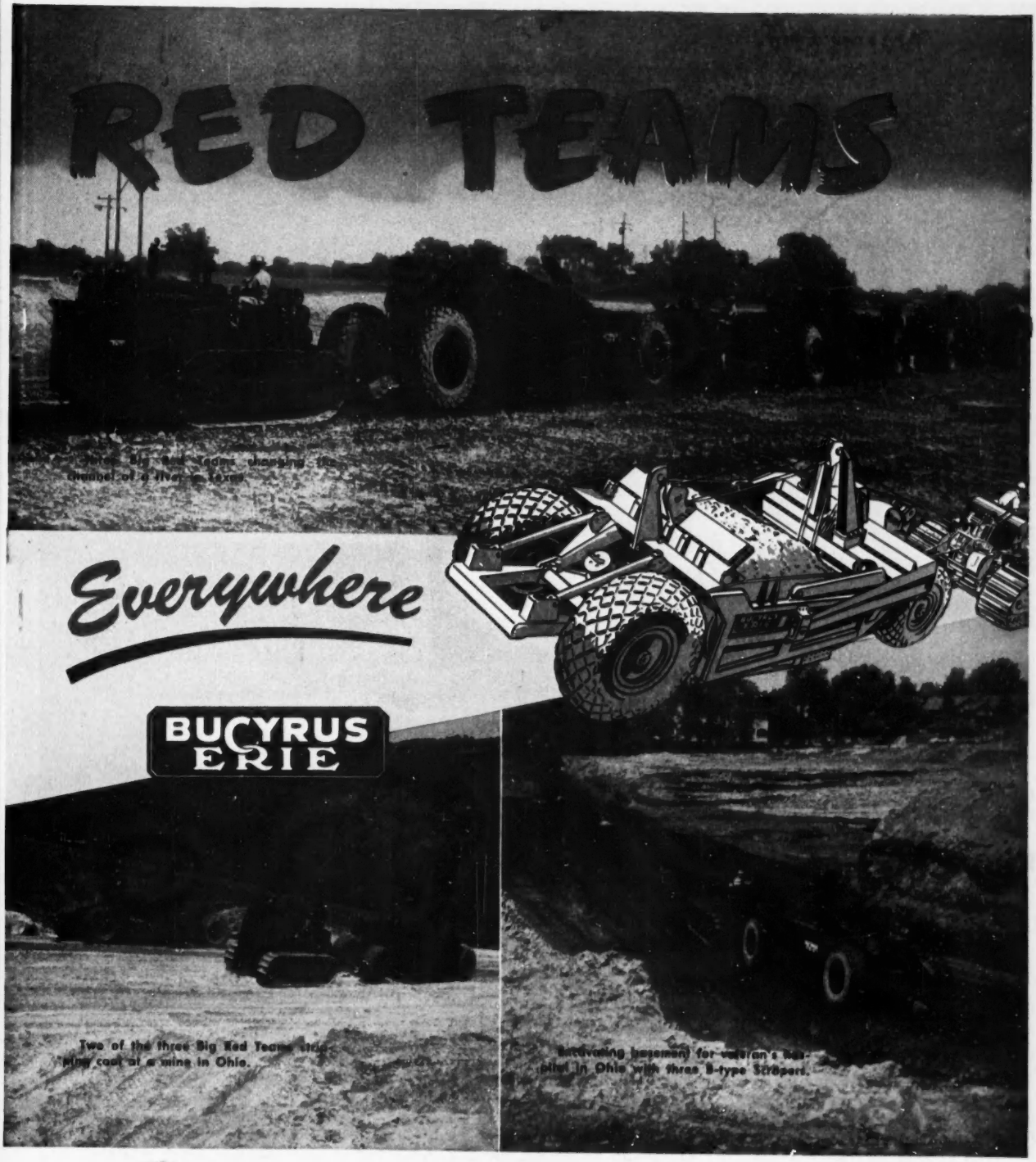
B-170A

Scrapers—16 yd. (struck measure)

Five Bucyrus-Erie B-250 Scrapers excavating at steam plant site in Tennessee.



Six B-Type Scrapers and TD-24's on strip mining in England.



Two of the three Big Red Teams strip mining coal at a mine in Ohio.

Scrapers big Red Teams changing the channel of a river in Korea.

Scrapers big Red Teams excavating basement for veteran's hospital in Ohio with three B-type Strippers.

BUCYRUS ERIE

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Industrial Tractor Distributor

BURNSIDE R. VALUE, member of the firm of Seelye, Stevenson, Value & Knecht, now heads an organization of consultants in New York City. (ENR photo by Compton)

New York City consultants elect head

Newly elected president seeks continued cooperation with the architects of the metropolitan area

Burnside R. Value recently was elected president of the New York Association of Consulting Engineers.

Value, a member of the firm of Seelye, Stevenson, Value & Knecht, has been in active engineering practice for 35 years. The organization he now heads represents over 40 engineering firms in the metropolitan area.

• **Career**—Since attending the University of Maryland, Value has worked on such engineering projects as: canals, bridges, dams, roads, tunnels, foundations and power stations.

During World War I, rising from lieutenant to lieutenant-colonel in the Corps of Engineers, he served in France on railroad, bridge and defense line construction.

On the Detroit and Canada Vehicular Tunnel (Detroit to Windsor), Value was the executive engineer.

One of his positions was as assistant chief engineer of the New York World's Fair. "This project had many interesting problems," Value said. "There were bad foundation conditions and necessity for speedy design and construction."

At present, Value and the firm in which he is a partner are engaged in airbase work all over the world in addition to other types of design. "Today's airfield, with its 10,000 ft runways and the increasingly heavy loadings of the runways, offers a challenge in design and construction," he said.

• **NYACE**—The New York association was organized in 1924 and lists among its aims:

• To safeguard good engineering practice and to promote the most satisfactory business relations of its members with their clients.
• To further the maintenance of high professional standards in the engineering profession.
• To foster the interchange of business experience among its members.
• To promote cordial relations among the various engineering firms in New York City.

Members of the association are primarily firms engaged in building design in the metropolitan area. They are ordinarily engaged as consultants by the architects of the city for the mechanical, electrical and structural design necessary for modern buildings.

"Members of the association negotiate with architects on the basis of suitability and experience along the line of the proposed projects, not on the basis of fees. Fees are negotiated with the ethical fee schedules of the professional societies, and the consulting associations in mind," Value said.

• **Value's aims**—"Our organization has tried to achieve better coordination of planning between architects and engineers. It is my aim to continue this work," Value explained.

"Our liaison with the architects includes formal meetings at which we discuss mutual problems and solutions of those problems," he continued. "It will be my duty to continue these meetings and also to continue informal meetings with my opposite number on the architect's side—Hugh Ferris, president of the New York chapter of the American Institute of Architects."

Myles C. McGough joins Bechtel Corporation

Myles C. McGough has become associated with Bechtel Corporation and its affiliates. McGough's headquarters are in the organization's New York offices.

A native of Brooklyn, N. Y., McGough was graduated from the University of Pittsburgh with a B.S. degree in Civil Engineering in 1928.

For the last 15 years he had been associated with Merritt-Chapman & Scott Corp.—for the last five years as vice-president in charge of MS&C's Land Division. As such, he had general responsibility for the designing and construction of chemical plants, paper mills, bag plants, incinerator plants and other industrial facilities.

(*Continued on page 73*)

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AN OPTICAL CONCLUSION

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Here, six precisely ground and polished lenses of specially selected glass, perfectly aligned in a Berger erecting-interior focusing telescope, combine just the right balance of optical precision to guard against chromatic or spherical aberration.

The optical line of sight is true to the mechanical center line of the telescope and at right angles to the axis bearings. The smoothly ground focusing slide is hand fitted to the telescope barrel—which has been accurately bored and lapped from end to end—to a smooth sliding fit with no shake; *yet no lubrication is required.*

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An optically true line of sight is just one more of the many *extra* long term values you are sure of when you buy BERGER . . . as so many leading engineers do.

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Wherever there's a need for dependable, economical transportation—at home or abroad—you'll find powerful 3-ton to 70-ton Plymouth Locomotives speeding production, cutting costs, boosting profits.

The picture is the same around the world. A 35-ton Plymouth (shown above) hauls passenger cars in the heart of the Belgian Congo. Another switches carloads of steel in South Africa. Still others haul cars of sugar on plantations in Mexico, the Hawaiian Islands, Puerto Rico.

While at home—an owner in Michigan reports, "Less than a day for maintenance a year!" From Connecticut: "Plymouth has increased production, reduced our costs." Others report savings of 66⅔%, 27 years of operation and still going strong.

Get the facts now! Find out which Plymouth performs most efficiently for your needs. Complete new catalog describes gasoline, Diesel, Diesel-electric models for narrow and standard gauge . . . and Plymouth's Hydraulic Torque Converter for smoothest possible operation. Send for your copy today. PLYMOUTH LOCOMOTIVE WORKS, Division of The Fate-Root-Heath Company, Dept. A-4, Plymouth, Ohio.

PLYMOUTH LOCOMOTIVES

ALSO MANUFACTURERS OF F-R-H CERAMIC MACHINERY

Volpe to head military engineers

Members of the Society of American Military Engineers named John A. Volpe to head the national organization at a dinner given last month by the society's Boston chapter.

Volpe is head of a Malden, Mass., construction firm. He is known for his leadership in communal and philanthropic activities.

Captain Wesley H. Randig, USN, president of the Boston chapter, presented Volpe with an engraved silver tray "in recognition of the honor you brought to your own chapter."

Volpe, in his remarks, pledged to continue "the effective work of my illustrious predecessors in the Society of American Military Engineers."

"I shall make it my personal project," he said, "to visit as many colleges and universities as possible to interest the students of engineering schools in our organization. These youths are the future leaders of our profession. If we cultivate their interest now, we will be laying the foundation for a stronger Society of American Military Engineers in the coming years."

Rear Admiral Joseph F. Jelley, USN, chief of the Bureau of Yards and Docks and head of the Seabees, told the gathering that the engineer must live up to the responsibilities of citizenship by broadening his horizons and taking more active interest in community affairs.

"It is not enough to be a good engineer," he said. "You must do something constructive for your community. Until the engineer learns to do something useful after 4:30 in the afternoon, he won't be fulfilling his full function as a citizen."

Other military and civilian leaders who participated in the ceremonies were Rear Admiral John F. McCrea, Commandant, First Naval District; Maj. Gen. James F. Phillips, Commander, Cambridge Research Center; Marshal N. Arlin, head of Wentworth Institute, and Stanley D. Porter, president, Associated General Contractors of Massachusetts.

Morse heads construction for New York City firm

Election of Carl A. Morse as vice-president in charge of construction for the Diesel Construction Co of New York was announced last week by company president, Erwin S. Wolfson.

Morse is at present an executive in the construction department of Bing & Bing, Inc., with whom he has

(Continued on page 75)

"THAT'S REALLY THE WAY TO HANDLE CONCRETE"

says L. G. (Bud) Waigand, Project Manager, Peter Kiewit Sons Co.

Two men ran this Noble batch plant with 28S Koehring mixer

How would you haul and place 16,000 yards of concrete on a big water reservoir job, with pours scattered all over . . . and with a tight schedule?

Peter Kiewit picked two 3-yard Dumpcretes, mounted on light, short-wheelbase Chevrolet trucks for their U. S. Bureau of Reclamation job near Salt Lake City.

"We liked the Dumpcretes because they're fast," says Mr. Waigand, "and because they place equally well into forms, buckets or collecting hoppers. They're rugged too, and cause little downtime."

For facts on 2, 3, and 4-yard Dumpcretes write today.

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Manufacturing Division
MAXON CONSTRUCTION CO., INC.
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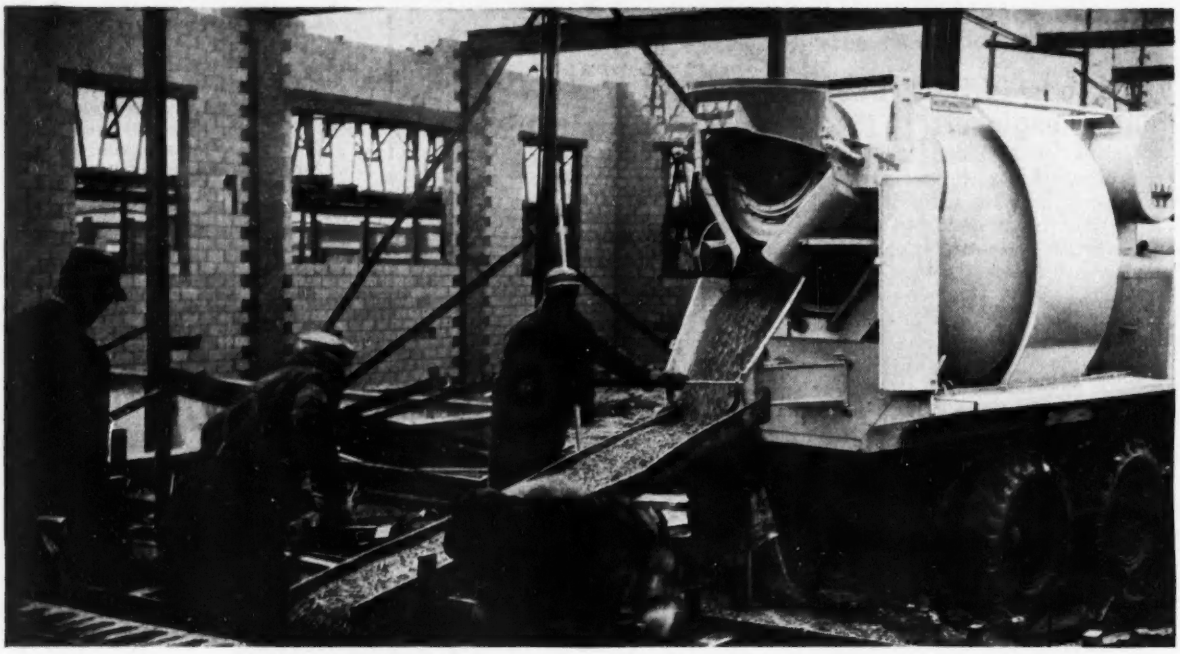
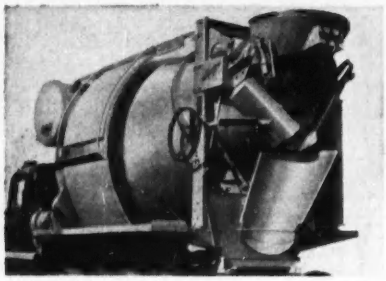
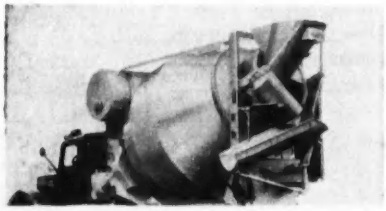


Get greater payload capacity with Worthington Hi-Ups



MODEL LC—standard equipment: top hatch loading door, closed end charging door, running boards, side shields. Approximate weight—7100 lbs.



MODEL LO—standard equipment: open end drum with fixed hopper, inspection plate, no side shields or running boards. Approximate weight—6300 lbs.

In Worthington Truck Mixers, engineered weight distribution brings the center of gravity well forward of the rear axle—enabling you to carry the maximum legal payload. Scale weight is held to a minimum, with no sacrifice in strength or operating efficiency.

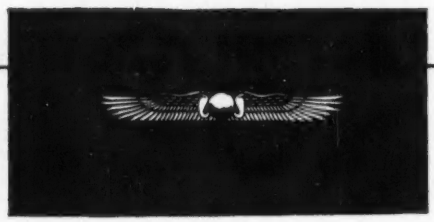
Rigid factory and field tests assure each Blue Brute user of trouble-free operation and low cost maintenance. All parts requiring attention are readily accessible for easy servicing.

The modern Worthington mixer is available in capacities of 3, 4½ and 5½ cubic yards, with respective agitator ratings of 4¼, 6⅛ and 7⅜ cubic yards.

Learn more about the Blue Brute Hi-Up—the truck mixer that is the ideal combination of light weight, strength and durability. Get in touch with your nearest Worthington Blue Brute distributor or write Worthington Corporation, Construction Equipment Division, Plainfield, N. J.

R-3-1

If It's A Construction Job, It's A *Blue Brute* Job



been associated since his graduation from Yale University in 1925. Starting as an assistant superintendent on the construction of the Hotel Taft, New York City, Morse has also served as chief engineer in charge of the maintenance department of Bing & Bing.

Careers . . .

• **Appointed**—New construction engineer-in-charge of the Coachella division, All-American Canal System, is **H. W. Van Loo,** acting engineer-in-charge since August . . . Montana highway commissioners have named **Scott P. Hart** chief engineer for the highway department . . . Commissioners in Ohio's Lucas County last week named **Raymond E. Hall** to head the newly created post of county sanitary engineer . . . New district engineer of the Portland Cement Association's Columbus, Ohio, office is **H. G. Wood** . . . **Charles A. Blessing,** director of planning for the Chicago Planning Commission, will take over as Detroit's city planning director . . . Three members of Arthur D. Little, Inc., Cambridge, Mass., have arrived in Egypt to undertake an industrialization project for that country under Point Four. **Earl Stafford, Richard M. Alt** and **A. G. Haldane** will study and make recommendations designed to advance industrialization.

• **Elected**—New York City's municipal engineers last week elected as their president **Pincus Rizak,** assistant chief engineer to the borough president of Manhattan . . . **Thomas J. Moran,** Poughkeepsie, has been named to the top post of the New York State Association of Highway Engineers . . . **John H. Flood,** St. John, N. B., will head the Canadian Construction Association . . . New president of the New York Sewage & Industrial Wastes Association is **Harry A. Faber** . . . **John C. Oliver,** Vancouver city engineer, has been elected president of British Columbia's Association of Professional Engineers.

• **Honored**—**Harry E. Jordan,** secretary of the American Water Works Association, will receive the group's Fuller Award from the New York Section this year. Jordan is a past-president and honorary member of AWWA . . . Alumni of Stevens Institute of Technology have named **Robert Moses,** New York City construction coordinator and commissioner of parks, as recipient of their honor award for "notable achievement" in the field of public works.

How long do you have to wait for prints?

If you wait more than a few minutes—or pay more than 2 cents a square foot for them—it's high time you took a close look at the *low-cost* Bruning COPYFLEX "20" whiteprinter. This efficient, medium-volume copying machine takes cut or roll paper stock, quickly turns out ready-to-use prints up to 42" wide—at an average cost of only 2 cents per square foot. It doesn't take fancy figuring to calculate the savings in time and money you'll realize when a Bruning COPYFLEX "20" copies your engineering drawings and office forms.

Here's a fast run-down of the cost-cutting features that are making the new COPYFLEX "20" so popular with budget-minded engineers, designers and architects.

LOWEST-PRICED copying machine in its class
TWO CENTS A SQUARE FOOT average operating cost
SPEEDS DELIVERY of dry, ready-to-use prints
NO FUMES to be exhausted . . . no expensive plumbing or ventilation systems required
OPERATES ANYWHERE – simply connect to a standard 115-volt a-c power line
NO TRAINING NEEDED to operate; only a 5 minute explanation

These are only a few of the facts and figures on hand to prove that the *low-cost* Bruning COPYFLEX "20" can give you better prints . . . faster . . . for less money. Just mail the coupon below—for details on the COPYFLEX "20". No obligation, of course. B.3.2

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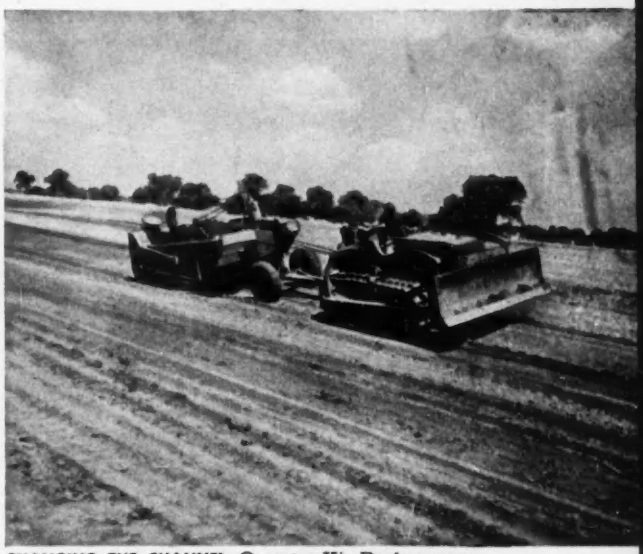
REMAKING A RIVER BED. The channel of the Arkansas River is being realigned by this fleet of International crawlers owned by the C. W. Kelley Transport Company, Inc., and Rush Construction Company, shown cutting new channel through section of island.

Speeds up Sleepy River

RIVER CROSSING. International crawlers reach islands to start re-channeling work by building earth ramps across the river. They worked in sand and water throughout the summer with no downtime.



CHANGING THE CHANNEL. Operator Kie Bayless says: "These TD-14As have more 'soup' than any other tractor their size. They just plain move more dirt."

International crawlers speed up flow of Arkansas River as safeguard for Kansas wheat belt

Flow of the long and lazy Arkansas River is being speeded up one-third along a 30-mile stretch in Reno County as a flood prevention measure aimed at safeguarding the rich wheat belt in this Kansas County.

When the river rises just six feet, and it does periodically, it spills all over the wheat fields and causes extensive damage.

But county officials feel they have a solution. This year they launched the first portion of a proposed three-year plan involving some $50,000 expenditure each year for elimination of bad turns and islands in the river channel. This improvement will increase the flow of the river from 4.06 feet per second to 5.41 feet per second or more and it is felt this faster flow will be sufficient to keep the river in its channel.

Dirt moving for the first-year phase of the improvement is being handled by Rush Construction Company and C. W. Kelley Transport Company, Inc., with rugged red International TD-18A and TD-14A crawlers.

H. M. Dunsworth, job foreman, reports:

"We lug these TD-18As and TD-14As down all the time. They not only have the power and maneuverability to do a bang-up dirt moving job, but that high-speed reverse sure makes us money on this river job as lots of the dozing calls for long pushes. These Internationals, and some have been used for years, have worked over two months here under miserable conditions with absolutely no downtime."

Ask your International Industrial Distributor for details on the whole International line of money-making crawlers. Ask him, too, about his fast, ready service and speedy parts delivery. Get all the answers . . . you'll want International "Power that Pays" from now on!

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

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POWER THAT PAYS

THE MOST DURABLE AND DEPENDABLE OF ENGINEERS STEEL TAPES!

***LUFKIN* "PEERLESS" WITH CHROME-CLAD LINE**

Here is the tape that will stand up best on the job. The ¼" wide Chrome-Clad line of the Lufkin "Peerless" is strongest because the fine tape steel of which it is made is further built up by electroplatings. These platings make the tape most rust and corrosion resistant. The smooth surface is easy to clean, and will not chip, crack or peel. The jet black markings are bonded right to the line—can't wear off—and are easy-to-read against the chrome-white surface. You can get your readings faster with less chance of error because the preceding foot number is repeated each inch.

The open assembly of the four-arm frame facilitates drying and cleaning the tape. Lock winding handle. Two finger rings are furnished for use without the frame.

BUY *LUFKIN* TAPES • RULES • PRECISION TOOLS FROM YOUR SUPPLY HOUSE

THE LUFKIN RULE CO., SAGINAW, MICHIGAN
132-138 Lafayette St., New York City · Barrie, Ontario 213

MacArthur Means:

Flexibility

of method for installing concrete pile foundations

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THE PROPER PILE FOR *any soil anywhere in the U. S. A.*

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You'll find the MacArthur story interesting. Write for it.

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TIMBERLOCK

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TIMBER CONNECTORS

Timberlock Split Rings comply with all Government specifications as to manufacture and material. Their excellent quality, favorable price, prompt service and acceptability have been proved by their satisfactory use in many projects under Government Jurisdiction. Extensively used in private building and multiple housing projects. *Write for complete information on prices and delivery.*

Dept. ER-3.

THE MARSH COMPANY
HASTINGS, NEBRASKA

OBITUARIES

Orman N. Powell, 65, chief engineer of Powell Bros. engineering and contracting company, Ft. Lauderdale, Fla., died Jan. 17. He was graduated from Auburn Polytechnical Institute, Auburn, Ala., and served as a lieutenant colonel in the 316th Engineers, 91st Division, AEF, in World War I. He was awarded the Croix de Guerre. Before going to Ft. Lauderdale in 1926, he practiced civil engineering in Texas and in the Philippines.

Nelson E. Hubbell, 61, a construction engineer for more than 30 years before he retired five years ago, died Jan. 18 in Buffalo, N. Y. He was graduated from Princeton in 1914 as a civil engineer. After service with the Lehigh Valley Railroad, he opened his own business.

George Edwin Tucker died Jan. 2 at Boise, Idaho. A graduate of the University of Michigan with degrees in both civil and mechanical engineering, he served as engineer for the Idaho State Land Department, the U. S. Grazing Service and various irrigation projects, and was engaged in private practice for several years. An engineer for 50 years, he was one of the oldest licensed civil engineers in Idaho.

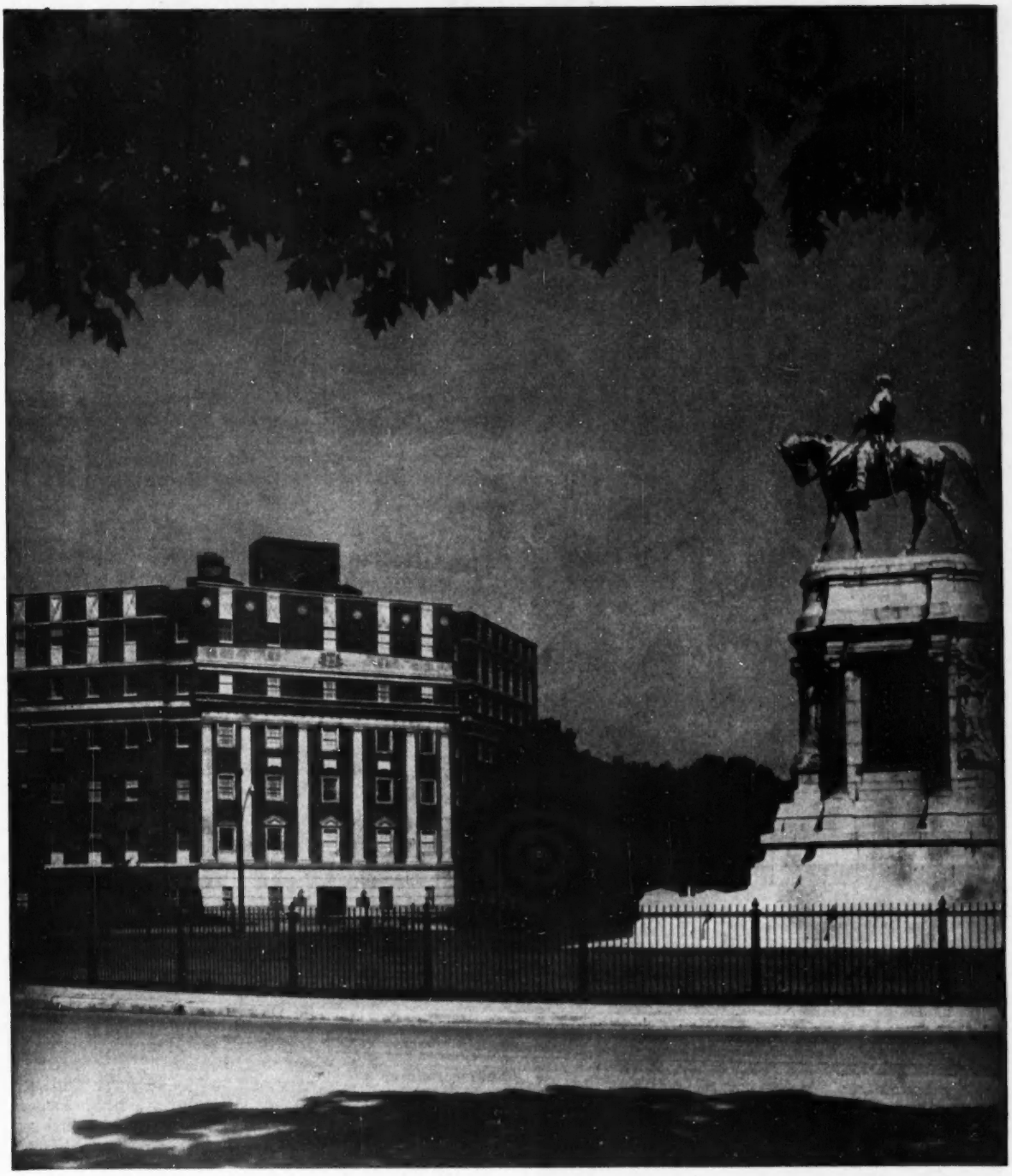
Micholas M. Fiorito, 66, paving contractor of Seattle, died there Jan. 15. He moved to Seattle in 1908, and four years later founded the Fiorito Bros. Co. with three brothers. After the firm was dissolved in 1930, he founded the N. Fiorito Co., in which his two sons became partners. He has supervised some of the largest paving and airfield contracts in the area.

William G. Obermeier, 62, general superintendent for A. L. Jackson Construction Co., died Jan. 15 in Chicago. He had been with the firm for 32 years. During World War II he served as construction superintendent of several ordnance plants.

Samuel Koffsky, 51, civil engineer and a recognized authority on tool design and construction, died Jan 15 in Albany, N. Y. He was chief engineer of Simmons Machine Tool Corp.

Clarence H. Fay, 75, public works commissioner of New York City from 1920 to 1922, died at Greenwich, Conn., on Jan. 20. He was a 1901 graduate of Cornell University.

(*Obituaries continued on page 80*)



New Medical Building in Virginia's Capital— This attractive 6-story structure, recently completed on Monument Avenue, in the residential section of Richmond, is named the Lee Medical Building. It is fully air-conditioned, has some 30,000 sq ft of office space, and is occupied by surgeons, physicians and dentists exclusively. The building is so designed that two additional stories can be added in the future, if conditions warrant. The attractive red brick exterior, with its neat limestone trim, covers a sturdy steel framework of Bethlehem Structural Shapes.

Builder and Owner: Franklin A. Trice; *Architect:* W. H. Pringle; *Steel Fabricator and Erector:* Richmond Structural Steel Company, Inc.

BETHLEHEM STEEL

RIGHT on the line!

-This time RIGHT on the PLATTE-

—Where all 4 Contractors* used CLEVELANDS to cut 988 of the 1058 total job miles . . .

From the mud of the river bottoms in Missouri and Kansas through the dust and heat of Nebraska, into the rock, frost and hills of Wyoming, CLEVELAND dependability, versatility, economy and all-around "digability" again paid off.

In 1953, be sure you, too, use this finer trenching equipment which was RIGHT on the Platte.

Contractors for the Platte Pipeline:

R. H. Fulton & Co.

O. R. Burden Construction Co.

Rumsey Bros. Pipe Line Construction Company

Fulton & Brodie

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THE CLEVELAND TRENCHER CO.

Pioneer of the Modern Trencher

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OBITUARIES

Jacob Hippert, 75, retired general superintendent of the contracting division of Dravo Corp, died in Pittsburgh Jan. 19. He retired in 1947 after 48 years of service. He was associated with such projects as the construction of the Point Bridge, McKees Rocks Bridge, Point Perry Railroad Bridge at Braddock, Lock and Dam No. 4 on the Monongahela River at Charleroi, Ohio River Lock 1 at Emsworth, and the Mahoning Dam on the Allegheny. He also helped build the Gallipolis Dam and Lock on the Ohio River, which has the world's largest roller gates.

Many other public works projects throughout the country also are numbered among the many Mr. Hippert was instrumental in building during his long engineering and construction career.

Eugene G. Campbell, 83, a civil engineer for the Ohio Highway Department for 28 years prior to his retirement nine years ago, died Jan. 19, 1953.

George G. Thorp, 84, former president of the old Illinois Steel Co., died in Chicago Jan. 19. He was a pioneer in the steel industry. He supervised the design, construction and operation of the U. S. Steel Corp's Gary, Ind., Works in 1906. He was a graduate of the University of Wisconsin, Madison, Wis.

D. Warren Reynolds, 62, retired maintenance engineer, Montgomery County, for the Maryland State Road Commission, died at Martinsburg, W. Va., Jan. 23.

Mr. Reynolds had served with the road commission for 35 years before his retirement last July. He began his engineering career with the Western Maryland R.R. in 1913.

Arthur Osbourne, 82, a retired chief engineer for the Denver and Rio Grande Western R.R., died in Denver, Jan. 18. He had worked for that railroad for 57 years before his retirement in 1948.

Mr. Osbourne was a University of Kansas graduate, and the author of a number of books and articles on railroad history and allied subjects.

John D. Slye, 67, former district engineer of the Wyoming office of the Bureau of Public Roads, died in Mesa, Ariz., Jan. 15. Previously he had worked with the bureau in Colorado and New Mexico. He was a member of the 1914 graduating class of the University of Colorado.

Install Kaylo Roof Deck -Get These Advantages...

LIGHT WEIGHT

With its weight of *only* 6 pounds per square foot, a Kaylo roof deck can be supported by a lighter structure—saves structural steel. Ease of handling and placing speeds up work and saves on construction costs.

HIGH STRENGTH

A Kaylo deck will support a total load of 50 pounds per square foot, with a high safety factor approved by leading code authorities.

INSULATING VALUE

Kaylo Roof Deck is hydrous calcium silicate with insulating value equal to one and one-half inches of standard insulation board.

FIRE-SAFETY

Kaylo Roof Deck is rated incombustible by Underwriters' Laboratories. The slabs alone can withstand fire for more than three hours.

LIGHT REFLECTIVITY

The smooth, underside of a Kaylo roof deck makes a *completed* ceiling that reflects more than 80% of the light striking it, even without painting or other treatment.

FAST, ECONOMICAL CONSTRUCTION

A Kaylo deck can be constructed in only three steps—installing the sub-purlins, laying the Kaylo roof slabs and grouting the end joints. The deck is then ready for covering with standard built-up roofing materials.

PROMPT DELIVERY ON KAYLO ROOF DECK!

Last year, despite continuous expansion of our manufacturing facilities, demand for this superior roof deck material far exceeded our ability to produce it. Now, with our increased production, you can specify Kaylo Insulating Roof Deck and get delivery—promptly.

WRITE FOR FREE BOOK—"Kaylo Insulating Roof Tile." Address: Dept. N-352, Owens-Illinois Glass Company, Kaylo Division, Toledo 1, Ohio.

KAYLO ... *first in calcium silicate*

...*pioneered by* OWENS ILLINOIS Glass Company

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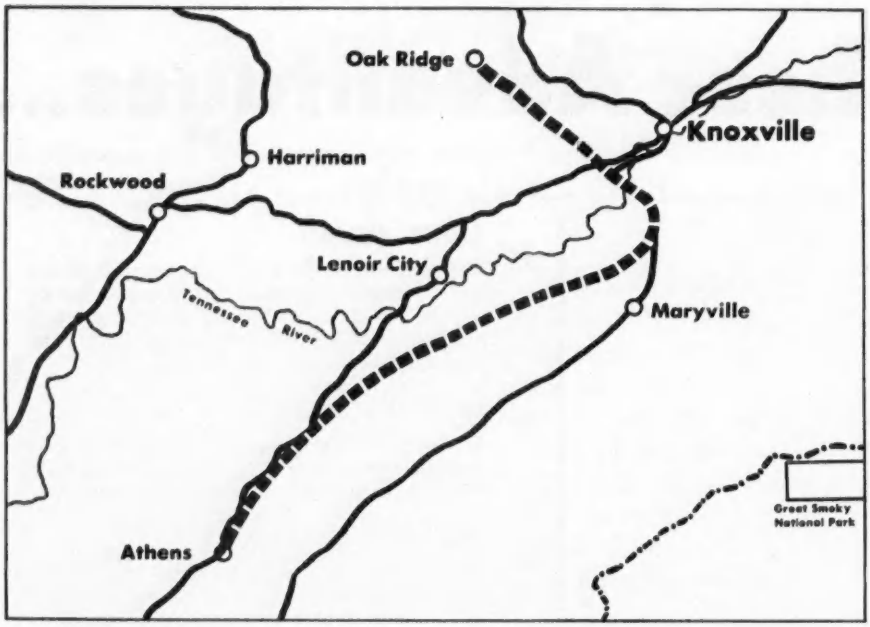


This shows the section of Tennessee covered by Oman Construction Co.'s contract. The mainline loop is about 175 miles in length.

Oman lays 8,000 feet of pipe a day on Tennessee Natural Gas Co. line

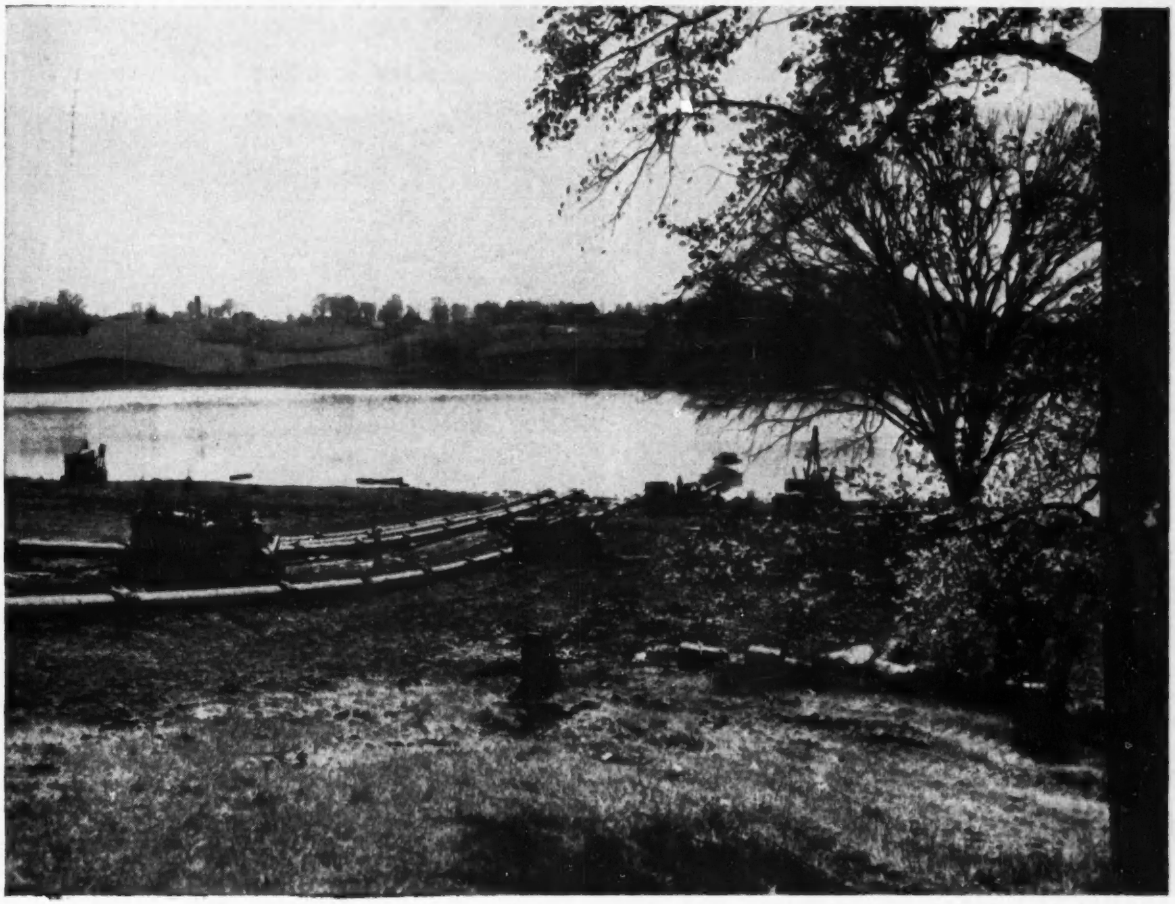
Oman Construction Co. of Nashville has the contract for 175 miles of mainline and 75 miles of laterals on the Oak Ridge-Knoxville-Athens section of the new Tennessee gas line. Most of the line is in 16-inch pipe with smaller amounts of 12-inch and some 22-inch pipe.

The terrain covered is rugged and hilly, here at the "Gateway to the Smokies," and it includes a crossing of the Tennessee River near Knoxville.

This Link-Belt Speeder backhoe, powered by a Cat D818 Engine, widens the trench near a road crossing on the new pipeline.

This is strictly a Caterpillar spread. Pioneering on the 50-foot right of way is done by three Caterpillar D8 Tractors with No. 8S 'Dozers. A Cleveland 320 ditcher, powered by a Cat D8800 Engine, follows them, and Link-Belt and Lorain backhoes, all equipped with Caterpillar power, do the widening at road crossings and sidebends. When solid rock is encountered, the drill power for blasting is furnished by a Gardner-Denver 500-foot compressor, driven by a Cat D13000 Engine.

In the stringing, bending and welding operations, pipe is handled by D7 Tractors with Pipe Layers. And D8s



▲ Caterpillar Diesel Tractors with Pipe Layers push pipe into the Tennessee River near Knoxville. Crossing is 1,900 ft. wide, 30 ft. deep.

with Pipe Layers do the cradling for doping and wrapping operations, as well as lowering pipe into the ditch. Two D8s with 'Dozers, a No. 6 Shovel and a No. 12 Motor Grader backfill the trenches and level and grade the right of way.

There is good evidence that standardization on Caterpillar equipment has helped this job go smoothly and fast. All the engines use low-cost No. 2 furnace fuel, and all the machines are built to take the beating of day-in-day-out work. Service and parts replacement are in the hands of a single, responsible dealer, who knows how to prevent costly delays. Mr. R. H. Richardson, General Superintendent, says:

"In my 25 years of pipelining, this is the first time that I've had 100% Caterpillar Diesel Tractors. That fact alone makes this job the best one I've ever worked on. The country can't get too rough for Cat equipment. We've had very little down-time. Right now we're getting 8,000 feet a day!"

Your Caterpillar Dealer stands ready to give you a demonstration on any type of Caterpillar equipment you want. And he backs it with genuine Caterpillar parts — the one kind that can give you genuine Caterpillar service.

▲ A Caterpillar No. 6 Shovel is used for backfilling trench and leveling right of way.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

BEFORE AND AFTER pictures of a model in a Stanford University laboratory show what an H-bomb might do to a four-story building. In the photo at left, Professor Lydik S. Jacobsen "detonates" the synthetic bomb with a hand switch. Effect of the explosion on the building is shown at right.

H-bomb explosion effects on buildings studied by Stanford researchers

Building model and simulated bomb blast help measure actual explosion damage

Simulated H-bombs daily are blasting a model of a four-story building into twisted wreckage at Stanford University. But each time the building is pushed upright in complete repair.

A record of the mechanical behavior of buildings hit by various intensities of bomb blast is the objective of Prof. Lydik S. Jacobsen, head of the Stanford Mechanical engineering department and Robert S. Ayre, now at Johns Hopkins University, Baltimore, Md.

The model consists of four metal rectangles placed atop each other to a height of 4 ft and surrounded by rings, rods and gages. The blast effect comes from nine air-driven pistons, four on each side and one on top. Timed electrically, all four pistons on the side where the bomb explodes push against the building simultaneously. Then, split-seconds later, the top piston presses on the roof and the remaining four pistons push against the opposite side.

Extent of bomb damage depends upon three factors:

- Blast intensity
- Nearness of building to center of explosion
- Strength of building

All of these factors may be accurately reproduced. Air pressure valves and timing devices regulate the blast effect. Springs coupled with circular friction brakes account for the building's flexibility as well as its final deformity.

Supported by grants from the Office of Naval Research, the project is housed in Stanford's Vibration Research Laboratory where earthquake effects have been studied.

Concrete under impact studied in California

To provide data for designing structures that will withstand explosions and earthquakes, the National Bureau of Standards, in cooperation with the Bureau of Yards and Docks, is surveying the properties of concrete under impact. The work is being done at the NBS Structural Laboratory.

Until the bureau's study began, the compressive strength and modulus of elasticity of concrete had been tested with rates of strain less than 2×10^{-6} in. per in. per second. Now, the rate can be varied between 10^{-6} and 10 in. per in. per second, as a result of recent developments in stress-measuring techniques involving electric strain gages.

In the current study, directed by David Watstein of the NBS Structural Laboratory, two types of concrete were subjected to both static and impact tests: One with 2,500-psi nominal static compressive strength, and a second with 6,500-psi strength. A drop-hammer was used in the impact tests.

Conclusions show that a given type of concrete has a dynamic compressive strength greater than its static compressive strength. As the duration of impact decreases, the dynamic strength is relatively greater. For the 2,500-psi concrete, the ratio of dynamic to static strength ranged, in tests, from 1.09 for a 0.9-sec impact to 1.84 for 0.00025-sec impact. The corresponding ratio for the 6,500-psi concrete ranged from 1.13 for the longer impact to 1.85 for a 0.00043-sec impact.

The modulus of elasticity of the concrete tested showed the same trend as the strength. The ratio of dynamic to static modulus increased as the duration of the impact was made shorter. The ratio of strain energy absorbed under dynamic loading to that absorbed under static loading reached a maximum of about 2.2 for both concretes tested.

(*Continued on page 86*)

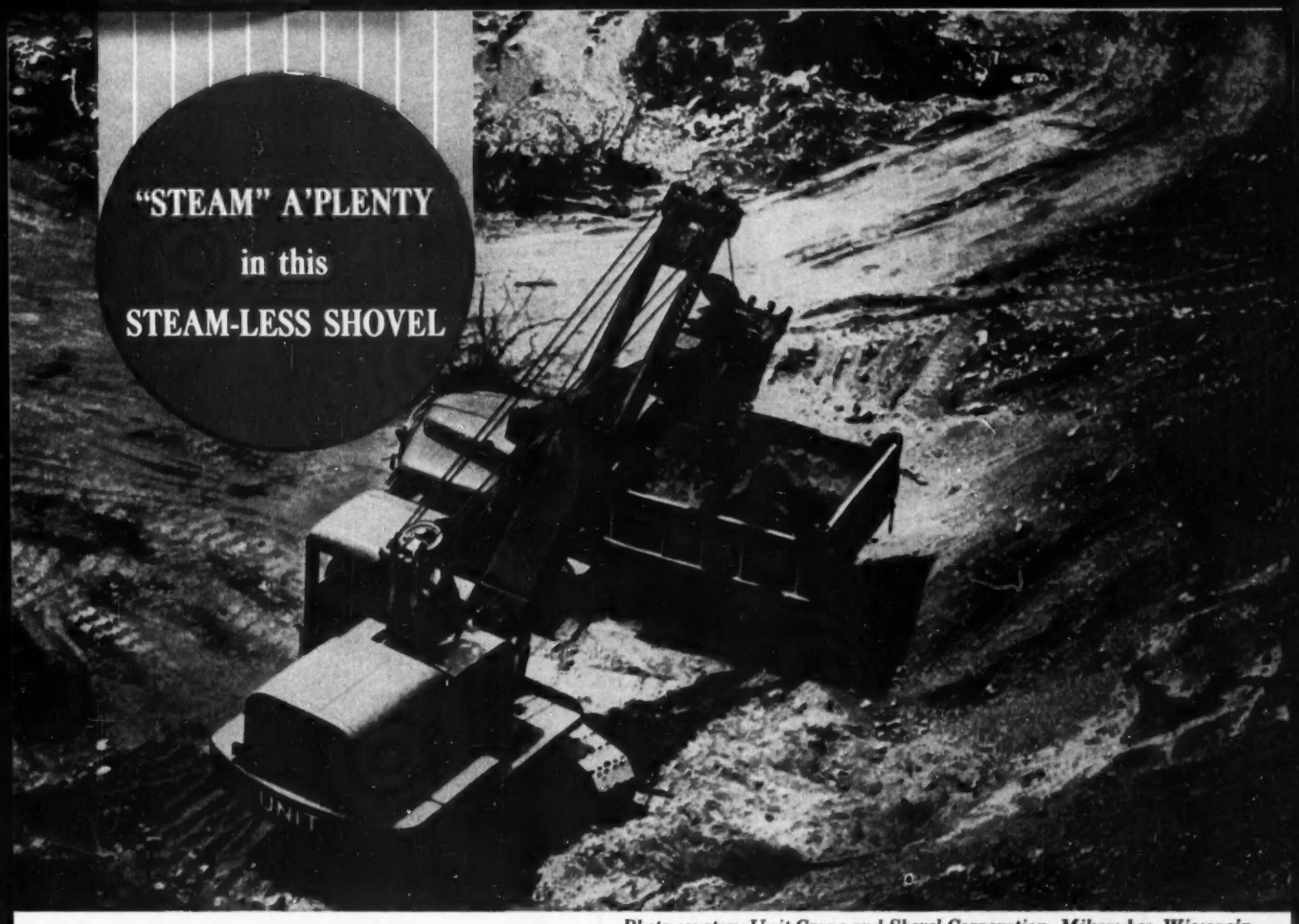
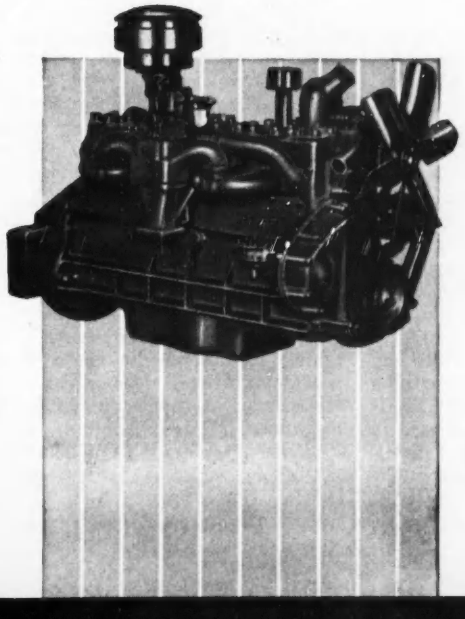


Photo courtesy Unit Crane and Shovel Corporation, Milwaukee, Wisconsin

...more work at less cost with Chrysler power and Chrysler torque converter



Today, all over the country, gasoline-powered versions of the old steam shovel are piling up record after record for volume output, speed and economy of operation.

In the vanguard of modern earth-moving equipment is Unit's model 614 one-half yard shovel, powered by the Chrysler Model 16 Industrial Engine and featuring the Chrysler torque converter as standard equipment. Unit operators find this an ideal combination since, in giving them fast, dependable power without risk of stalling, work output is *increased* while fuel consumption is actually *decreased*. Moreover, the smooth application of power through the torque converter eliminates shock loads to engine and equipment, thereby reducing maintenance costs.

This is but another example of how Chrysler is meeting the many and varied requirements for industrial power. For example, Chrysler can supply manufacturers with a corrosion-resistant or fungus-treated electrical system, a propane or natural gas-burning carburetor, three, four or five-speed transmission, standard or gyrol Fluid Drive.

Despite all these advantages, Chrysler Industrial Power is not expensive. Production-line methods adapted to specialized industrial engine building, provide a custom-built engine at mass-production prices.

See a Chrysler Industrial Engine Dealer. Or if your problem is special, write us direct:

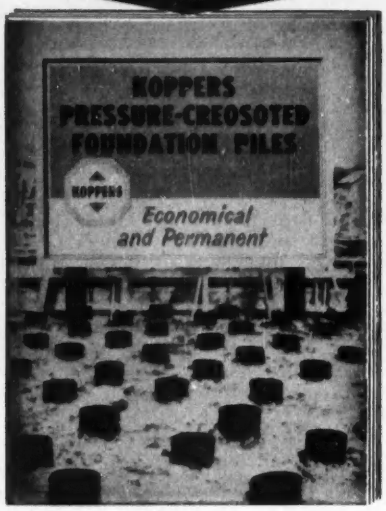
Dept. 72, Industrial Engine Division, Chrysler Corporation, Trenton, Mich.

CHRYSLER
Industrial Engines

HORSEPOWER ***WITH A PEDIGREE***

VALUABLE MANUAL

Shows how creosoted timber piles save money . . . assure permanent foundations



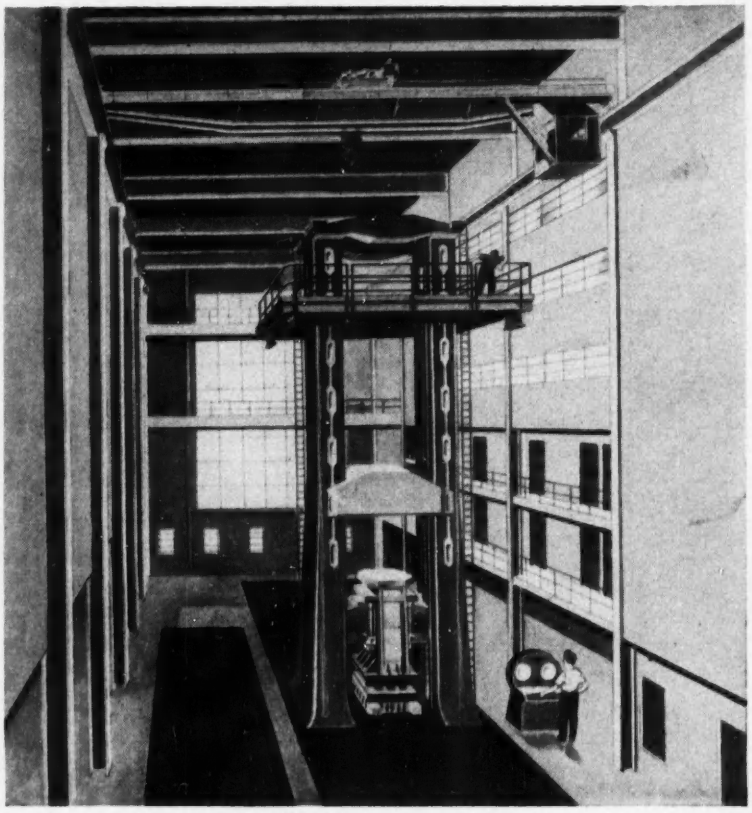
Here's a book every engineer should have. It's filled with interesting facts. Graphic descriptions. Photographs of modern construction projects, large and small, that are founded on pressure-creosoted piles.

An interesting book, yes—but informative, too. Case histories tell how substantial savings have been effected and unusual construction problems have been solved by founding permanent structures on creosoted timber piles.

You'll find this book a valuable reference. Send for a copy today. There's no obligation involved.

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

KOPPERS PRESSURE-TREATED WOOD



VERTICAL TESTING MACHINE to be built at Lehigh is shown in interior sketch of new building which will adjoin Fritz Engineering Laboratory.

Lehigh University to build world's largest testing machine

Million-dollar laboratory to house testing machine on Lehigh campus

Plans for a $1.2-million laboratory at Lehigh University to house one of the world's largest universal testing machines have been announced by Lehigh President Martin D. Whitaker.

The proposed seven-story brick building, 130 x 70 ft and the 5,000,000-lb capacity hydraulic tension compression tester, to cost $400,000, are expected to be ready for use by September, 1954.

To coordinate old and new facilities best, the new building is to be located just south of the Fritz Engineering Laboratory with its 800,000-lb universal testing machine.

The new building's 70-ft width will feature a 50-ft bay to be served by a 20-ton crane. Approximately 58 ft high, the machine will be housed in this area to permit testing of building columns and the compression members of railroad and building trusses.

Tests can be made on members 40 ft long using cross sections ordinarily found in these structures. Structural tension members 40 ft long, such as suspension bridge cables and those in railroad bridges can also be tested. The laboratory floor is designed to provide for vertical loads of 100,000 ib at any point in the area.

In addition to housing the testing machine, the building also will have five laboratories, a library conference room, two seminar rooms, an elevator and 21 offices.

Auxiliary machines will permit extensive studies on the effect of repeated and dynamic loads which often cause failure through the fatigue of the material. The laboratory now has a torsion machine of 2,000,000-lb capacity, largest in the United States.

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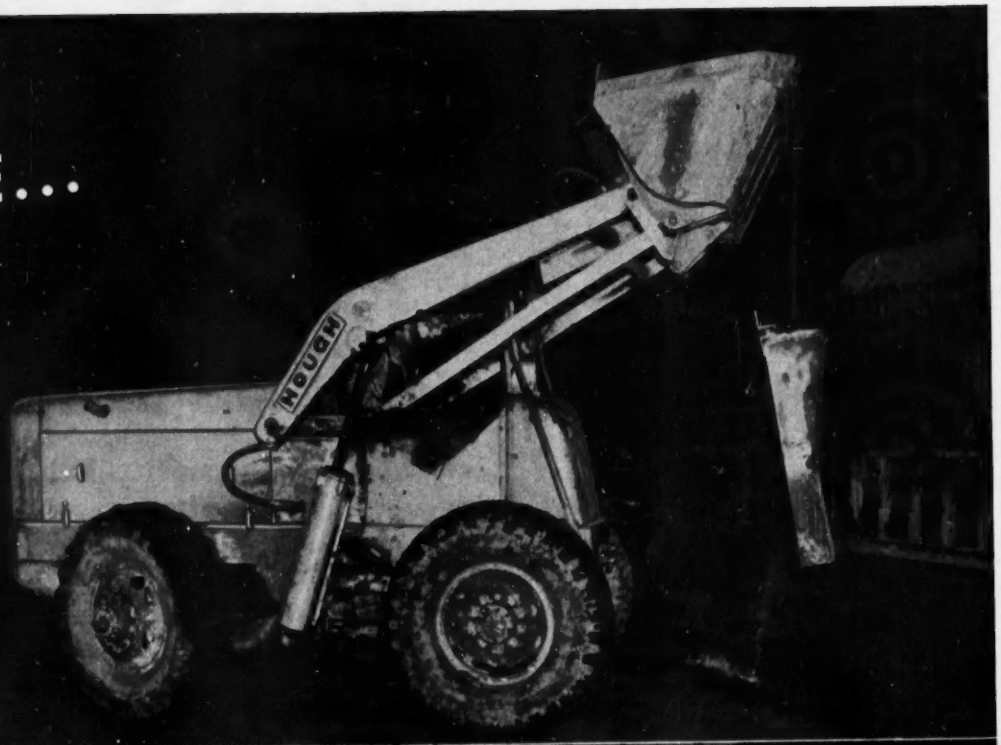
PAYLOADER®

INSIDE...



OUTSIDE

TRACTOR-SHOVELS

do double duty on BATES and ROGERS Tunnel Contract . . .

John W. Rogers, Vice-President, says, "Our two Hough 'PAYLOADERS' were used to good advantage. We were very well satisfied with their performance."

Last summer Bates and Rogers Construction Corporation successfully finished a tunnel for the B & O Railroad near Clarksburg, W. Va., in spite of very tough conditions created by an abandoned coal mine, shattered rock and high ground pressures. Two four-wheel-drive "PAYLOADER" tractor-shovels with 1½ cu. yd. buckets were skillfully employed, both inside and outside of the tunnel. They handled all sand and gravel for concrete . . . removed spoil from the face . . . cleaned out ditches . . . carried and lifted tunnel steel, wood panel forms and channel tile . . . loaded trucks with limestone ballast.

Contractors, big and little, find these versatile, rugged "PAYLOADERS" pay off for all sorts of jobs — to dig, load big hauling units, bulldoze, spread, backfill, carry, lift, lower, pull and push. They like the tremendous traction, flotation and all-around ability of these unusual wheeled tractor-shovels, their ability to get to the job fast under their own power, the four speeds in each direction. Once you see one of these big "PAYLOADERS" in action, you'll want them too. Get full details from your Hough Distributor or write The Frank G. Hough Co., 772 Sunnyside Ave., Libertyville, Illinois.

Loading trucks with rock for track ballast was another profitable "PAYLOADER" operation on this tunnel contract.

WRITE for free catalogs on any size "PAYLOADERS": 4-wheel-drive Models HM — 1½ yd. and HR — 1 yd.; rear-wheel-drive Models HY — 1¼ yd., HF — ¾ yd. and HE — ½ yd.; front-wheel-drive Models HAH — 15 cu. ft. and HA — 12 cu. ft.

PAYLOADER®

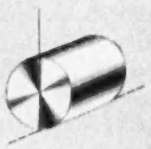
SAY "HUFF"

There's a growing preference for ROLLWAY BEARINGS

...and with good reason!

RIGHT ANGLE

ROLLER ENDS, precisely square to avoid end-rub, oscillation and side-shock.

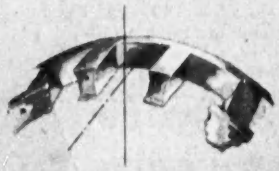


RIGHT ANGLE

BEARING SURFACES with parallelism that results in unwavering right-line rolling.

RIGHT ANGLE

SEPARATOR SLOTS accurately machined to prevent roller skew, slide and uneven wear.



Unwaver'ng right-line rotation—free of skew, side-shock .nd end-rub—greatly extends the life expectancy of a Rollway Roller Bearing. Add to longer life the definite gains in smoother operation and lower maintenance costs and it's understandable why, today, demand for Rollways has reached a new peak.

Our increased facilities are expanding Rollway output as fast as possible. We are continuing to improve the balance between supply and demand, so that service to both established and new customers will be geared to their quantity requirements . . . another reason why bearing users can confidently specify "The bearings that *roll* right because they're *made* right."

Our complete engineering and metallurgical services will gladly work with you on your problems. Simply write or wire any sales office. No cost. No obligation.

Rollway Bearing replacements are available through authorized bearing distributors in principal cities. Consult your classified 'phone directory.

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ROLLWAY BEARINGS

Complete line of Radial and Thrust Cylindrical Roller Bearings

Rainmaking projects aid Washington foresters

Rainmaking machines are helping to extinguish forest fires and aiding the germination of Douglas fir seeds, say Washington state foresters.

State Forester Bernard Orell cited specific cases in which cloud seeding has been advantageous to the forestry department:

- Last July, to curb a fire in the Washington woods, clouds over the burning area were seeded with silver iodide. By nightfall rain fell stopping the spread of flames. Firefighters held the fire to 600 acres of logging slash.
- Also last April, the division found rainmaking helpful. Foresters had scattered Douglas fir seeds over 360 acres and rain was needed to help the seeds germinate. One of the division's five generators was placed in operation and within a few hours, a light rain fell.

The division began experiments in late summer of 1951, setting up its generators in western Washington. The generators operated during eight periods of from one to five days each. During each period, results obtained were believed to be directly related to the cloud seeding.

Old wood water pipe found in Ohio

An old wooden water pipe believed to be made of cypress and laid before the Civil War was recently dug up in Bellevue, Ohio, by Ohio Fuel Gas Co. workers laying a new line. Two pieces were found. About three feet long, the pipe sections are bound with metal strip and covered with pitch for sealing. The pipe was being used when city records were started in 1877.

THE Ferguson MODEL RT 100-5 PNEUMATIC ROLLER

50 TONS Compaction

WRITE FOR DESCRIPTIVE FOLDER & PRICES

This FERGUSON sand-ballast rubber-tire roller weighs 100,000# ballasted; 19,000# empty. 1250# bearing pressure per inch of width, fully ballasted, with 18.00x24" 24-ply tires. Other size tires also available. Tongue detachable and interchangeable with arched-type tongue for use with rubber-tired tractors. Engineered and constructed for years of rugged service.

We also manufacture
SHEEPSFOOT & TAMPING ROLLERS OF ALL SIZES
RUBBER-TIRED COMPACTORS UP TO 200 TONS
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BLADES - BITS - RIPPERS
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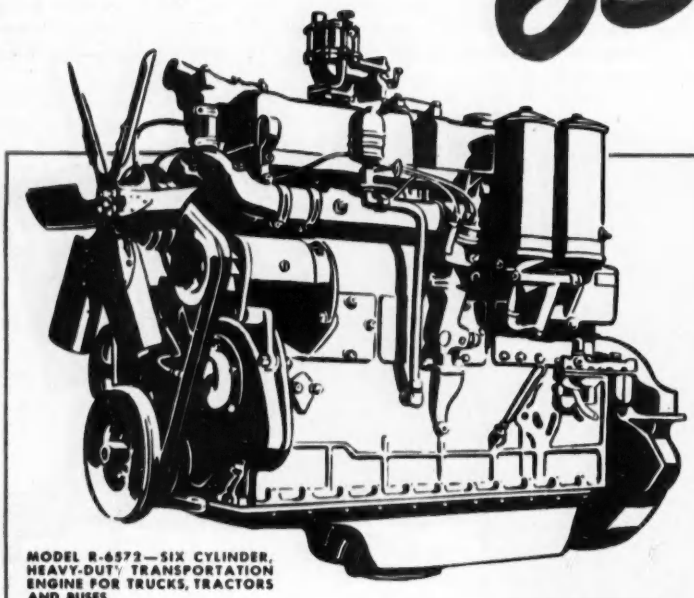
CONTINENTAL MOTORS · AMERICA'S STANDARD · Powerful as the Nation

28
35
63

One big reason why it's wise to choose Continental-powered vehicles and equipment is the unusual completeness of the Continental Red Seal line. There are 28 transportation models and 35 industrial (gasoline, Diesel, L.P.G.)—a total of 63 different *basic* power plants in these two classifications alone. Continental builds to some 2,000 different specifications, spanning a horsepower range from 14 to 277, and including at least one engine matched to the needs of every job.



MODEL R-6572—SIX CYLINDER, HEAVY-DUTY TRANSPORTATION ENGINE FOR TRUCKS, TRACTORS AND BUSES.

FIVE SERIES OF SMALL AIR-COOLED ENGINES

For lawnmowers, garden tractors, sprayers, and similar equipment, Continental manufactures five series of air-cooled industrial models—vertical shaft and horizontal shaft—from ¾ to 2½ h.p. For full information, address Air-Cooled Engine Div., 12800 Kercheval Ave., Detroit 14, Mich.

N E W S

SERVICE EVERYWHERE

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LEGAL

Damages due to owners for defective construction

A contract was entered into for the construction of a house in accordance with certain plans and specifications. The price to be paid the contractor for the work was $6,900. During the course of the work progress payments were made to the contractor totaling $3,450. When the house was completed and tendered to the owners, they refused to accept it and also refused to make any further payments to the contractor, claiming that the house had not been built pursuant to the plans and specifications.

The owners then brought an action to recover the sum of $3,450 which had been paid the contractor during the progress of the work, claiming that it would cost that much to correct the defects in the work. The contractor counterclaimed for the sum of $3,450, the balance claimed to be due under the contract.

The court found as a fact that the house had not been built as required by the contract and that it would reasonably cost the owners $3,500 to complete the work in a good and workmanlike manner, and denied the contractor any recovery.

The judgment was affirmed on appeal,[1] the appellate court holding that the correct measure of damages that the owner is entitled to is usually the cost of remedying the defects in the work. The court in its opinion also pointed out that in some cases where the remedying of the defects would impair the structural efficiency of the building, the measure of damages is the difference between the value of the building as constructed and its value had it been constructed according to the plans and specifications. However, in neither case is the contractor entitled to any compensation unless he can show that he has substantially performed the contract.

(1) Tucker v. Northcutt et ux., 248 S. W. 2d 750, Court of Civil Appeals of Texas, April 17, 1952.

Substantial performance

An action was brought[1] to recover a balance allegedly due the contractor for the doing of some work on a building. The contractor claimed he had fully performed the contract but the owner claimed that the work had been defectively performed and that in spite of the fact that the owner, during the progress of the work had called the contractor's attention to certain defects in the work, the contractor

proceeded with the work without correcting the defects. The court found as a fact that the contractor had failed to substantially perform the contract and denied him a recovery. This judgment was affirmed on appeal to a higher court.

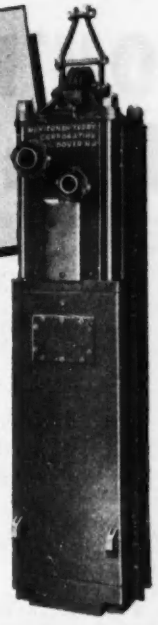
The appellate court in its opinion stated: "Of course if the evidence establishes the fact that the plaintiff substantially performed the contract 'even though he has failed in some minor particulars, he is entitled to recover the contract price less what will be a fair allowance to the owner to make good the defects in the performance of the contract.' Reese v. Kline Bldg. & Const. Co., 149 A. 826, 827, 8 N. J. Misc. 296 (Sup. Ct. 1930); Globe Home Improvement Co. v. Michnisky, 120 N.J.L. 233, 199 A. 393 (Sup. Ct. 1938); Palmeri v. Albanese, 12 N. J. Super. 338, 79 A. 2d 699 (App. Div. 1951). On the other hand, the law is settled that it looks to the spirit of the contract and not the letter of it and the question, therefore, is not whether the party has literally complied with the contract, but whether he has substantially done so. 'Generally speaking, partial performance of an entire and indivisible contract by one of the parties does not entitle him to performance of the contract by the other and does not warrant a recovery by the former against the latter upon the contract. Full or substantial performance of the promise of one party, is a condition precedent to the right to maintain an action on the promise of the other unless the promise of the latter is independent of any performance by the former.' 12 Am. Jur., Contracts, sec. 344, p. 903. Also see, Williston on Contracts (Rev. ed.), sec. 805, p. 2256, wherein, at p. 2262, it is stated:

" 'Where the rule of substantial performance prevails it is essential that the plaintiff's default should not have been willful; and the defects must not be so serious as to deprive the property of its value for the intended use nor so pervade the whole work that a deduction in damages will not be fair compensation.' "

(1) R. Krevolin & Co., Inc. v. Brown et al., 89 A. 2d 255, Superior Court of New Jersey, Appellate Division, June 9, 1952.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

McKIERNAN-TERRY
SINGLE-ACTING
PILE HAMMERS



- **The most modern design of single-acting pile hammer on the market, based on more than half a century of specialized experience**
- **Specially designed for driving into very dense substances such as clay, hard pan, compacted gravel, etc. and for driving heavy mass piles**
- **Built in a range of 5 sizes**
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- **Many exclusive features for most effective blows, convenient operation and maintenance, and long wear**

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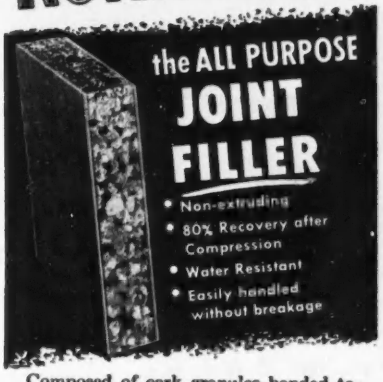
KORK-PAK®*



Composed of cork granules bonded together with asphalt between two sheets of heavy asphalt-saturated paper, KORK-PAK is the lowest cost, non-extruding joint filler on the market. KORK-PAK is readily handled without breakage . . . and when used in conjunction with Para-Plastic Joint Seal, always provides complete joint filling and protection.

Write for details and prices on KORK-PAK. Catalog sent without obligation.

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MATCHED TO MILLIONTHS assure the lasting accuracy and free movement of the

BRUNSON BALL-BEARING BASE*
USED ON ALL BRUNSON SURVEYING INSTRUMENTS

Permanently lubricated and factory sealed against dust, the Brunson Ball-Bearing Base allows a total eccentricity of not more than + or — ¼ second of angular error. To obtain this accuracy, it is necessary for us to engineer and produce in our own plant these Bearings and spindles—each stabilized to the accuracy of precision gauge blocks. Because these ball bearings are pre-loaded and operate under tension, they remove all grease from the point of contact. This assures greater accuracy than any other type of bearing which must allow for grease or oil film. *Write for details. *Patented.*

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YOU'RE 5 YEARS AHEAD of any other air compressor

Some compressors are still being built to the old 1932 ratings which are too small for modern air tools.

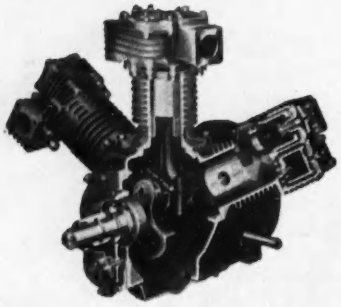
Other models have recently appeared with the higher ratings needed today.

These higher ratings, which others now offer in "new models," are the ones Jaeger has been building for 5 to 7 years, *and backs with the proved performance of more than 30,000 "new standard" compressors in the field.*

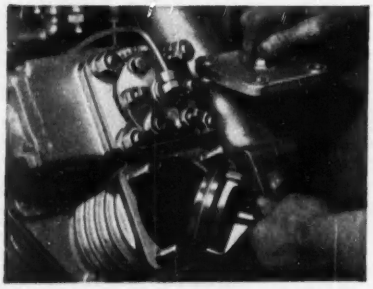
NEW:	**75 cfm**	**125 cfm**	**185 cfm**	**250 cfm**	**365 cfm**	**600 cfm**
OLD:	**60**	**105**	**160**	**210**	**315**	**500**

These 15% to 25% higher ratings insure 90 to 100 lbs. pressure at today's big tools, instead of 70 lbs., increasing their work output by 30% to 40%. No "old standard" machine can successfully compress, cool and deliver these larger air volumes. No new compressor has been built to deliver these volumes with the smooth, cool, long-life performance of the Jaeger Air-Plus.

Here's Why:

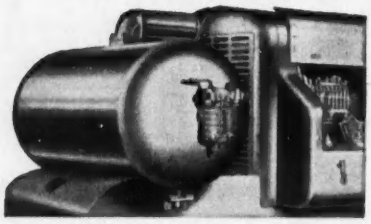


Balanced W-type 2-stage compressor standard in all sizes, 75 to 600 ft. Cooler and smoother running than any V-type, in which single low and high pressure cylinders are unequally opposed.

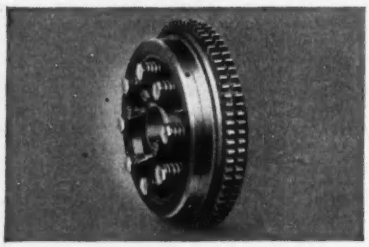


75% to 100% larger valves for free flow without back-pressure and air-plus coolness at the heart of your compressor. Most efficient ever designed and up to 10 times longer lived than ordinary valves.

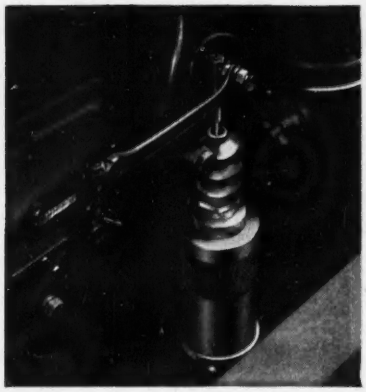
Positive lubrication by gear-driven oil pump, standard on all models.



Larger intercoolers and air receivers to cool and handle more air. Relief valve for automatic drainage, standard on all models.



Bigger multiplate clutches than others, and bigger engines operating at conservative speeds.



Jaeger "Fuel Miser" standard on all models where automatic control of engine speeds means worthwhile fuel savings. Accelerates and decelerates without wasteful jumps over full range of speeds. A Jaeger consumes no more fuel than smaller compressors when it is not delivering more air.

Lowest cost compressed air you can buy today

Prices of Jaeger "new standard" compressors are in every case below those being asked for old standard compressors of 15% to 25% less air capacity. On the basis of cost-per-cubic-foot-of-air-delivered, the difference is even greater, amounting to many dollars saving on every cubic foot of air capacity. On the basis of work output, the difference is greatest — amounting to 30% to 40% more production through more efficient operation of your air tools.

Why pay more and get far less when you can buy a proven Jaeger Air Plus Compressor.

when you buy JAEGER

"NEW STANDARD" 75: Runs a heavy breaker at full efficiency.

"NEW STANDARD" 125 (illustrated): Runs 2 heavy breakers or a 55 lb. sinker at full efficiency.

"NEW STANDARD" 185: Runs 3 heavy breakers, or 1 heavy or 2 medium rock drills at full efficiency.

"NEW STANDARD" 250: Runs a 3½" wagon drill, or 2 heavy rock drills or a 10 hp Ka-Mo earth drill at full efficiency.

"NEW STANDARD" 365: Runs 4" wagon drill plus plug-hole drill or runs a 15 hp Ka-Mo earth drill — at full efficiency.

"NEW STANDARD" 600: Runs two 4" wagon drills plus a hand-held drill, or runs heavy 9B-3 pile hammer — at full efficiency.

The construction industry needs these 6 "new standard" ratings — and no more.

Note how perfectly each one of these ratings fits the air requirements of today's tools. Neither too small nor too large, they provide the air you need to maintain 90 to 100 lbs. at the tools instead of mere 70 lbs. At this full pressure tools hit harder and faster, will actually do 4 days' work in 3 for the same wages paid.

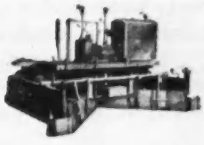
See your Jaeger distributor or ask for Catalog JC-1, which gives you full facts about tools and their air requirements.

"Speedline" Mixers

5 to 7 second charging and discharging gains more batches per day. Machined steel drum tracks, heavy duty transmissions, rugged long-life construction. Sizes 3½S to 16S.

"Sure Prime" Pumps

Built with oversize shells and impellers, largest engines applicable. Prime and pump at lower, long-life speeds. De-watering pumps, 3600 to 240,000 gph. Pressure pumps up to 275 psi.



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Self-propelled paver-type Aggregate Spreaders. Concrete Spreaders with screw or screw and screed. Concrete Finishers — transverse or diagonal screed types.

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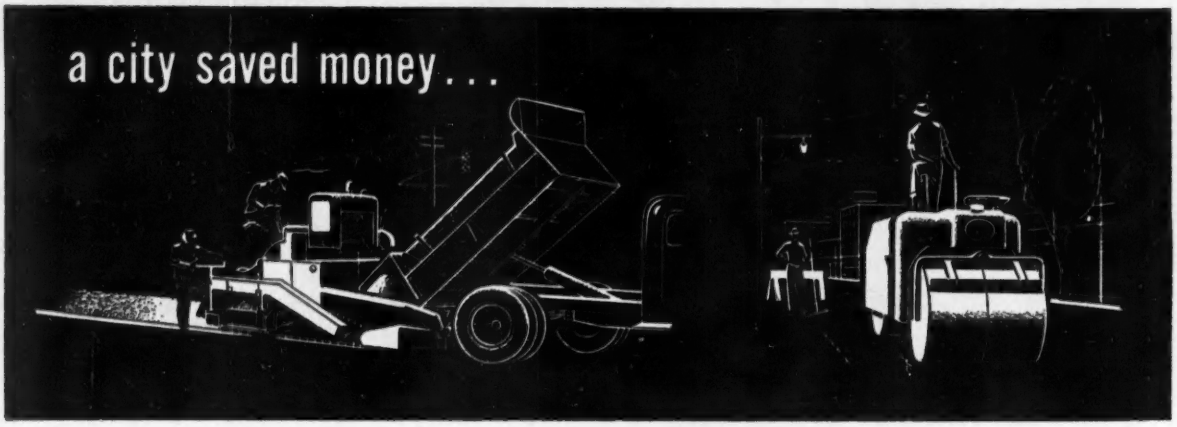

...by bringing low-cost native aggregates up to "paving" standards with versatile BITUMULS®

IN EVERY LOCALITY there are low-cost aggregates—decomposed granite, red rock, bank-run gravel, shell, etc. Untreated, these materials are rarely suitable for base construction. When cold-mixed with small amounts of Bitumuls, however, they become stable and easily pass specification requirements for this type of work.

Municipalities get lowest paving costs when *maximum* use is made of these native aggregates and local plant mixing equipment. Typical are conditions in Oakland, California, where a local contractor conveyor-feeds waste bank-run gravel directly into hoppers that feed the material into his pug-mill. There it is mixed with a small quantity of Bitumuls and dropped directly into trucks that haul it to the job. This material, mixed cold and with damp aggregate, is ready for immediate compaction as base material on streets throughout the city. Costs are low due to use of marginal aggregate and utilization of spare time of the mix plant. *This results in profits to the contractor and lower costs to the city for high bearing base material.*

The wearing course may be asphaltic concrete from the same plant but with approved aggregate, or macadams bound with quick-setting grades of Bitumuls.

Throughout the country, Bitumuls is readily available from strategically located plants for on-job delivery.

There are Bitumuls Engineers in your area who know aggregate sources. They welcome an opportunity to consult you about your paving needs.

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Inglewood, Calif. Oakland 1, Calif. Portland 7, Ore. Washington 6, D. C. San Juan 23, P. R.

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
March Materials, and Labor Prices will appear in March 5, 1953 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash. dis. not deducted			SAND AND GRAVEL Per ton. carload lots			CRUSHED STONE Per ton. carload lots		CRUSHED SLAG Per ton. carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block		CONCRET Ready Mixed 1:2:4, aver.
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	80 c.y., del.
Atlanta	$3.87	$3.56	3.40	$2.075	$2.075	$1.83	$2.20	$2.20	$1.87	$1.99	$0.21	$0.21	$12.06
Baltimore	3.76	3.45	3.38	2.50‡a	2.50‡a	2.00‡a	2.70‡a	2.80‡a	2.60‡a	2.55‡a	.17	.17a	11.25
Birmingham	3.11	2.81	....	2.38a	2.38a	2.08a	2.50	2.50	1.15	1.35	.165	.165	9.85
Boston	4.01	3.69	3.81	2.50a	2.50a	2.50a	1.50a	1.60a	....	....	.20	.22a	11.50h
Chicago	3.33	3.02	....	3.00‡b	3.00‡b	3.40‡b	3.00‡b	3.00‡b	3.00‡	2.00‡	.22	.22b	11.44/11.94
Cincinnati	3.61	3.40	3.40	2.09‡c	2.14‡c	2.14‡c	2.44‡e	2.44‡e	....	....	.21	.225a	11.45
Cleveland	N. A. in C. L.		....	2.05f	1.85f	1.65	3.81a	3.81a	2.95‡	2.95‡	....	.23	12.40d
Dallas	2.95	2.65	2.70	2.18	2.28	1.84	2.22	2.38	....	....	.125e	.215	9.30
Denver	3.89	3.59	3.89	1.85	2.00	1.20	....	....	....	....	.22	.25a	10.50
Detroit	3.27	3.00	3.05	4.25‡b	4.25‡b	3.75‡b	4.25‡	4.25‡	4.25‡	4.25‡	.19	.20a	10.75f
Kansas City	3.30	3.03	3.15	1.85‡	1.85‡	1.50‡a	2.00‡a	2.00‡a	....	....	.20ag	.215e	11.60b
Los Angeles	4.00a	3.60a	4.72	1.95a	2.20a	1.95a	1.95a	2.08a	....	....	.125fm	.23m	10.43ih
Minneapolis	3.80d	3.49d	3.41	2.30‡ag	2.30‡ag	1.35‡ag	2.80‡ag	2.80‡ag	....	....	.21ih	....	12.15fi
Montreal	3.16ae	2.96ae	....	3.00	3.00	2 25	1.65j	1.90j	....	....	.20	.20a	10.55eh
New Orleans	3.20	3.02	3.18	2.32	2.32	1.82	....	....	1.05	1.25	.25	....	12.90
New York	3.86	3.55	3 43	2.35bk	2.35bk	1.60bk	2.50bl	2.50bl	....	....	....	....	11.80an
Philadelphia	3.43/3.82‡	3.12/3.49‡	3.43/3.48‡	2.75‡	2.75‡	2.35‡	2.10‡	2.15‡	1.75	1.65	.22/.25	....	11.80
Pittsburgh	3.32	3.04	3.32	2.25‡	2.25‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.22d	.22d	12.80
St. Louis	3.27/3.49b	2.84/3.10b	3.05/3.22	2.90am	2.70am	2.30/2.70am	1.70f	1.70f	1.50	1.50	.215	.215ei	10.75
San Francisco	3.36	2.96	....	1.92	1.92	2.02	2.02	2.02	....	....	....	.23el	10.70e
Seattle	3.75a	3.25a	4.50a	3 00‡bm	3.00‡bm	3.00‡bm	3.50‡bm	3.50‡bm	....	....	.24j	.3325j	11.40f

†Delivered. * Prices incl. dealers comm. except as noted.
CEMENT: a Subj. to 10¢ dis. b Less 2% for cash. c CL price dealers comm. not incl. d Dealers sell only LCL. h LCL.
SAND, GRAVEL, STONE & SLAG: a Truck lots. b Per cu. yd. c 5 tons or more. e ¼". f Pea gravel. g Less 5% for cash. h Less than 5 tons. i Sales tax incl. j F.o.b. quarry. k Barge lots sold. l F.o.b. scow Hudson river. m Less 2% for cash. n F.o.b. cars.

CONCRETE BLOCK: a Cinder. b Waylite. c Haydite. d Celocrete. e 5⅓ x 8 x 12 in. f 8 x 4 x 16. g F.o.b. truck at job. i Less 2% for cash. j Less 1% for cash. k 8x8x18. l F.o.b. plant San Rafael. m F.o.b. yard.
READY MIXED CONCRETE: a 5 cu. yds. or over del. Man. b 25 cu. yds. or more. c 10–100 cu. brackets. d 1–3 mi. zone. e 2,000 lb concr. f 2500 lb. comp. h Less 50¢ for cash. i 5% off for cash. j 2% off for cash. k Sales tax included. l 1:2½:4. m F.o.b. yard. n Plus escalator clause.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$2.60†	Buffington, Ind.	$2.55†	Steelton, Minn.	$2.65†	Muskegon, Mich.	$2.70†	Toledo, O.	$2.60†
Clinchfield, Ga.	2.60†	Independence, Kan.	2.50†	Leeds, Ala.	2.45†	Saginaw, Mich.	2.60†	Milwaukee, Wis.	2.75†
Kingsport, Tenn.	2.60†	Hannibal, Mo.	2.55†	Duluth, Minn.	2.65†	Wyandotte, Mich.	2.60†	Green Bay, Wis.	2.75†
West Des Moines, Iowa	2.65†	Northampton, Pa.	2.60†	Hudson, N. Y.	2.60†	Buffalo, N. Y.	2.60†	Ironton, O.	2.60†
Nazareth, Pa.	2.60†	Universal, Pa.	2.65†	Alpena, Mich.	2.50†	Oswego, N. Y.	2.75†	Montreal City	2.66
Bath, Pa.	2.60†	Waco, Tex. (+ 10¢ tax)	2.50†	Detroit, Mich.	2.60†	Cleveland, O.	2.60†	W. Winfield, Pa.	2.65†

†*Prices to hold for first quarter of* 1953.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration		CUTBACK ASPHALT Per ton		ROAD OIL Per gal.	ASPHALT EMULSION (Quick-breaking) Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8¼ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	$82.00	$41.00	$2.25	$26.00	$33.25	$0.215	$0.455	$0.095w	$0.185w	$0.105	$0.115	$0.225[
Baltimore	150.00‡	58.00‡	.....	22.00i	.....	.0809i	0.15i	.09iw	.17iw	.09i	.09i	0.12i
Birmingham	.....	45.50i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50a	35.50a	22.00ax	35.50ax	.....	.....	.09a	.105a	.22a
Chicago	155.00‡	90.00‡b	4.40/4.60‡f	20.25b	30.25b	19.25bx	29.25bx	.0875bw	.19bw	.075b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	200.00	55.00d	5.03g	23.00A	.....	23.00A	.....	.1025Aw	.....	.....	.114	.184[
Dallas	e	40.00	e	24.05	43.09	.1016	.2103	27.09	47.87	.0980	.1041	.2128
Denver	.....	48.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	92.00	.....	26.82	.....	26.82x	.....	.117w	.....	.0925	.....	.2811r
Kansas City	e	e	e	16.50el	...	.055	.....	.07rw	.....	.0585e	0.435	.....
Los Angeles	e	.....	e	15.50dmz	...	15.50dmz	.....	17.00dz	.....	16.00dz	.0825f	.1725f
Minneapolis	.....	.....	2.97h	25.07	.....	24.07	.....	.0894w	.....	.0794	.0935	.....
Montreal	.....	e	e	27.10n	36.65n	.135n	.193n	16.30nu	18.80nu	.132n	.184nz	.225nz
New Orleans	.....	.....	.....	17.50o	....o	17.50ox	.....o	.085ow	.....o	.0825B	.0825	.....
New York	.....	.....	3.12f	26.26g	47.50g	25.26gt	46.58gt	.1071w	.2021w	.1071	.1072	.1993
Philadelphia	175.00	110.00	4.06	22.00	.....	.....	.....	.095u	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	23.00	37.00	.10	.21	27.00	39.00	.095	.09	.205
St. Louis	.....	.....	.....	18.68f	.....	.1698	.....	.0865/.089v	.....	0.15	.0975	....e
San Francisco	.....	55.00e	.....	17 00g	32.50gp	17.10gkx	32.50gkx	19.00g	36.50g	17.50u	.085g	.....
Seattle	.....	.....	.....	17.00k	37.50k	16.25kx	.....	19.50k	...	18.50kx	.095k	.105kr

‡ Delivered.
PAVING BRICK & BLOCK: a CL. b 3¾ x 4 x 8¼. c 2¼ x 8¼ x 4. d LCL, truck deliveries. e Not used. f 2" interior 6¢ treat. g 3". h 8¢ treat. i 3 x 3⅝ x 8⅛.
ASPHALTS: a Price at plant, Everett, Mass. b F.o.b. refinery, Lockport, Ill. c F.o.b. Sugar Creek, Mo. d F.o.b. refinery, El Segunda. e F.o.b. Baton Rouge. f F.o.b. Wood River or Roxana, Ill. g F.o.b. Richmond, Calif. h F.o.b. Martinez. i F.o.b. refinery, Baltimore. j F.o.b. refinery, Inglewood, Calif. k 50–110 penetr. l Less than 100 penetr. m 40–80 penetr. n Tax incl. o Drums not avail. p Shipped in steel bbl. q 40–85 penetr. r In customer's drums. s Shipped in drums, per drum. t 85–300 penetr. u Per 100 gal. v Per ton. w Per Gal. x Also tank trucks. y F.o.b. Oakland. z F.o.b. refinery, Cleveland. A F.o.b. Norco, La.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$3.85	$3.90	$3.95	$7.85	....	$75.50	$85.00	Not	$4.925	$6.65	$4.775	....
Chicago Area	3.85	3.90	3.95	7.85	$4.675	75.50	85.00	avail-	4.925	6.65	4.775	....
Pittsburgh Area	3.85	3.90	3.95	7.85	4.675	75.50	85.00	able	4.925	6.65	4.775	$9.85
Buffalo Area	3.85	3.90	3.95	7.75	4.675	75.50	85.00	....	4.925	6.65	4.775	9.85
Cleveland	....	....	3.95	7.85	4.675	.....	.....	....	....	....	....	9.85
Youngstown Area	....	....	3.95	....	....	.....	.....	....	....	6.65	....	....
Geneva	3.85	3.90	....	....	....	.....	.....	....	....	....	....	....
Los Angeles	....	....	....	....	....	.....	.....	....	....	6.65	....	....
Pueblo	4.30	4.70	4.75	....	....	75.50	95.00	....	4.925	6.65	4.775	9.85

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price *u* 5 tons to carload lot *b* New billet	Rail steel	Add'l extra switch	$/cwt for Del.	EXPANDED METAL LATH *k* Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING *d* Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$7.31	$7.11	$7.11	$.025	$...	$38.00‡	$42.00‡			
Baltimore	6.47	6.48*l*	....	....	....	42.00	45.00			
Birmingham	5.95	5.80	5.80	.05	.15	47.00*p*	52.00*p*			
Boston	6.56*a*	6.92	6.92	....	....	40.00	43.50			
Chicago	5.95	5.33*ff*	5.33*ff*	.0625	....	46.00*C*	51.00*C*			
Cincinnati	6.42*ak*	6.63*r*	....	....	.15	37.50*aee*	41.00*aee*			
Cleveland	6.28	5.31*v*	....	....	....	36.50‡	39.00‡			
Dallas	9.05	7.25	7.25	....	....	49.00	52.00			
Denver	7.55	7.50*e*	....	....	....	50.00*a*	62.00*qa*			
Detroit	6.42	6.24*n*	....	....	.20	53.00	58.00			
Kansas City	6.70*nn*	6.97	....	....	....	35.50	39.00			
Los Angeles	6.70/*kk*	6.57*g*	....	....	....	48.00	54.00			
Minneapolis	6.51*kk*	7.60*ll*	7.60*ll*	....	....	36.00	39.00			
Montreal	7.00*kB*/7.00*A*	4.90*e*	4.90*g*	....	....	58.64*k*	64.00*k*			
New Orleans	....	5.80*ek*	....	.08	....	66.00	60.00			
New York	6.77	6.71	6.71	....	.30	38.50*at*	42.50*at*			
Philadelphia	6.42	6.67	....	....	....	39.50‡	43.50‡			
Pittsburgh	5.80/6.00	5.80/6.00	....	....	.10	37.60	39.60			
St. Louis	6.35*a*	5.95*c*	5.95*c*	....	....	49.00*aa*	55.00*aa*			
San Francisco	7.12	6.50*l*	....	....	....	40.50	43.50			
Seattle	4.50*e*	5.80*el*	....	....	....	57.00*emm*	47.00*emmx*			

A.P.M.* Joliet, Illinois, Donora, Penn., $2.81 — F.o.b. Mill: Monessen, Penn., $2.81

A.P.M.* Joliet, Illinois, Donora, Penn., $1.96 — F.o.b. Mill: Monessen, Penn., $1.96

A.P.M.* Joliet, Illinois, Donora, Penn., $2.95 — F.o.b. Mill: Monessen, Penn., $2.95

* At Producing Mill.

‡ Delivered. *b* Less than 700# add 50¢; 700–1499# add 65¢; 1500 to 7999# add 50¢. *c* 20 tons or over base. *d* Mill price plus freight. *e* F.o.b. plant. *f* Includes delivered in free delivery zone. *g* 10,000 to 39,999 lbs. *k* List price. Dominion tax exempt. Provincial and Municipal tax extra. *i* Plus Dominion, Provincial and Municipal sales tax. *j* Price per ton. *k* F.o.b. city. *l* Intermediate and hard grade, new billet. *m* Per sq. yd. *n* 5–10 tons. *o* 5 to 20 tons base. *p* Del. of 500 sq. yd. or more. *q* Std. ribbed, 4 lb. per sq. yd. *r* 5 tons or over. *s* LCL. *t* Asphalt coated. *u* Note: Revised size extra — 1 in., 1¼ in., 1½ in., 10¢, ⅞ in., ¾ in., 15¢, ⅝ in., 25¢, ½ in., 50¢, ⅜ in., 80¢, ¼ in., $1.90. *v* 20 tons. Straight. *w* Copper bearing. *x* 2.5 lb. per sq. yd. *y* $0.0093 transportation tax included. *z* Copper alloy. *aa* Delivered truck to job. Contractor to do unloading. *dd* F.o.b. dock. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales. *kk* 10,000–19,999 lbs. *ll* 5 to 8 tons, f.o.b. city. *mm* 2% off for cash. *nn* 1–5 tons. *#* 10 tons to CL. *a* 2000–9999 lbs. *A.* Amer. struct'l shapes. *B.* Canadian shapes. *C.* Deliv to contractor.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in. *a*	ASBESTOS CEMENT PIPE per lin. ft., f.ob. city 6" Pr Cl. 150	12" Sew Cl. I	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	24 in.
Atlanta	$101.00	$1.44	$2.42	.545	1.27	4.82	12.925	248.00	356.00	1.23	2.62
Baltimore	109.00	1.46	2.42	.546	1.053	4.275*A*	11.3775*A*	178.20	274.80	.90	2.45
Birmingham	101.00*A*	1.44	2.42	.42	.75	2.99	....	250.00‡	375.00‡	1.25*m*	2.75*m*
Boston	113.00	1.46	2.20	.553*uvz*	1.0665*uvy*	4.41*uvy*	11.90*uvy*	187.80*z*	289.20*z*	1.55*mq*	3.80*mq*
Chicago	107.00	1.44	2.20	.70*m*	1.35*m*	5.62*m*	13.50*m*	150.00‡	270.00‡	.80	2.80
Cincinnati	106.00	1.46	2.29	.567*y*	1.093*y*	4.32*y*	11.175*y*	164.40	254.10	.75*m*	2.80*m*
Cleveland	108.00	1.46	2.29	.49*z*	.945*z*	3.96*z*	10.66*z*	158.00*m*	245.65*m*	.75*m*	2.95*m*
Dallas	112.00	1.46	2.54	.436	.822	3.234*b*	9.17*b*	.....	.....	.49	1.60
Denver	115.00	1.55	2.54	.43*dd*	.74*dd*	3.18*dd*	....	.....	.....	.74*m*	2.50*m*
Detroit	108.00	1.46	2.29	.72	1.39	5.58	14.91	240.00*m*	360.00*m*	.80	3.20
Kansas City	113.00	1.46	2.29	.515	.92	3.64	9.20	216.70	465.00	.70*g*	3.00*g*
Los Angeles	124.00	1.53	2.29	.51*f*	1.07*f*	5.24*f*	13.06*f*	228.20*f*	348.90*f*	.95	2.75*ff*
Minneapolis*	112.00	1.50	2.42	.72*mo*	1.32*mo*	5.32*mo*	....	.....	.....	1.38*h*	3.93*h*
Montreal	115.00	....	....	.85*z*	1.56*z*	5.25*z*	....	.....	.....	1.17*j*	3.11*j*
New Orleans	101.50	1.44	2.42	.513	.93	5.15	....	265.00*bb*	455.00*bb*	.65	2.29
New York	111.35	1.46	2.20	.62	1.20	4.81	12.60	.....	.....	1.15	2.50
Philadelphia	110.00	1.44	2.20	.65	1.25	4.95*A*	12.65*A*	300.00‡	350.00‡	1.55*h*	3.75*h*
Pittsburgh	109.00	1.46	2.20	.428*m*	.794*m*	2.97*m*	7.92*m*	149.00	232.00	1.05*h*	2.50*h*
St. Louis	112.00	1.46	2.29	.51	.93	3.65	9.21	160.00*l*	360.00*l*	1.20*il*	2.70*hl*
San Francisco	122.00	1.55	2.29	.61*d*	1.20*d*	5.03*d*	12.57*d*	240.00*l*	460.00*l*	.73	3.02
Seattle	124.00	1.55	2.42	.51*b*	.91*b*	....	....	150.00*e*	.....	.86*ee*	2.56*ee*

* WROUGHT STEEL PIPE

Mill	(Full standard weight) 2½ & 3 in., Butt Weld† Black %	Galv. %	3½ to 6 in., Lap Weld† Black %	Galv. %	8 in.	10 in.	12 in.
Lorain, Ohio	40.0	26.25	....	....	....	....	....
Aliquippa, Pa.	40.0	22.25	....	15.25*a*	....	....	....
Sparrows Pt., Md.	38.0	20.75	33.0*a*	10.25*a*	34.75*c*	16.0*c*	....
Benwood, W. Va.	40.0	21.75	....	....	....	....	....
Youngstown, O.	40.0	22.75	32.0*ab*	....	14.25*a*	....	....
Indiana Harbor, Ind.	39.0	21.75	....	....	....	....	....
Lorain, Ohio	40.0	20.75	33.0*a*	13.75*a*	....	....	....
Wheatland, Pa.	40.0	20.75	34.75*c*	13.5*c*	....	....	....
Etna, Pa.	40.0*b*	19.25*b*	20.5*ab*	6.25*ab*	....	....	....
Fontana, Calif.	28.5*b*	14.75*b*	....	....	....	....	....

† Threaded and coupled. *a* 3½ to 4 in. *b* Continuous weld. *c* 5 and 6 in.

‡ Delivered. *a* Class B & heavier. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional. 30 in. and larger, usually, $1 per ton less. *b* Extra strength ASTM C 200–44T. *c* 4-in., $90. *d* 88361-A. *e* 30-in. *f* F.o.b. factory. *g* Culvert pipe. Reinforced, ASTM C76–41. *h* Reinforced, ASTM C75–41. *i* Reinforced, ASTM C76–37. *j* Centrispun. No. standard specifications in Can. *l* F.o.b. plant. *m* Truck delivery. *o* Listed price is based on LCL (no minimum). *p* Less than 5 tons, per price per ft. *t* Within switching limits. *u* ASTM C13–40. *v* C.L.f.o.b. origin, freight allowed. *x* 2 ft. lengths. *y* 3 ft. lengths. *z* CESA A 60–1941 specifications used. *aa Extra strength ASTM C–200–50.* A standard strength. * 6", $1.67 per ft.; carlots, F.o.b.,track Class 150. *bb* Freight allowed to destination in city. *cc* Truck loads; f.o.b. plant, Newton. *dd* LCL delivered. f.o.b. truck. *ee* 1% off for cash. *ff* 21.

A. Correction: Jan–Aug 1952, $96.00; Sept '52–Jan '53 $101.00

* WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price approx. $200 per net ton. List prices per ft.: *Butt Weld:* ¼ in., 5½¢; ⅜ in., 6¢; ½ in., 6¢; ¾ in., 8½¢; 1 in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld:* 3½ in., 92¢; 4 in., $1.09, 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steelpipe. Discount for Pittsburgh base. *Butt Weld* — 1 in. black, + 25.75, galv + 57.0; 1¼ in. black, + 25.75, galv. + 56.5, 1½ in. black, + 19.25 galv. + 52.75; *Lap Weld* — 2½ in. to 3½ in. black + 26.25, galv. + 55.5; 4½ in. to 8 in. black + 23.0, galv. + 50.75. Freight rates to destination to be added to name delivered price.

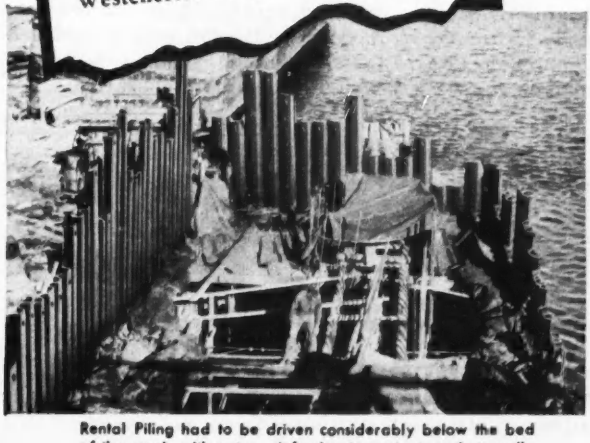
"The BIG SAVING was FOSTER RENTAL PILING"

On complicated 3-sided cofferdam for the $5 million East Bronx Unionport Bridge Construction.

Says John Ury, Project Manager for Contractors:

WM. M. MOORE BUILDING CORP.
and
LOPIER CONSTRUCTION CORP.
75 West 190th Street
Bronx, New York

Construction started in 1949, and skillful driving of 30 to 45 ft. Interlocking Steel Sheet Piling by these 2 contractors made this an economical, successful job. Unionport Bridge crosses Westchester Creek in East Bronx.



Rental Piling had to be driven considerably below the bed of the creek, with extra reinforcing to protect against swells.

An interesting installation of piers had to be constructed atop 35-year old existing caissons. Here was a tough water seepage problem in a complicated 3-sided cofferdam — approximately 1,000 gpm had to be pumped out of the cofferdam by two 6-inch pumps. Steel Sheet piling was needed — on time — in the exact section and lengths (30 to 45 feet). And Foster had it — just what the job required. A phoned order — a prompt delivery, a dependable quality — and a low cost, requiring no huge purchase investment on the part of the contractor, made FOSTER RENTAL PILING the 100% answer for this job.

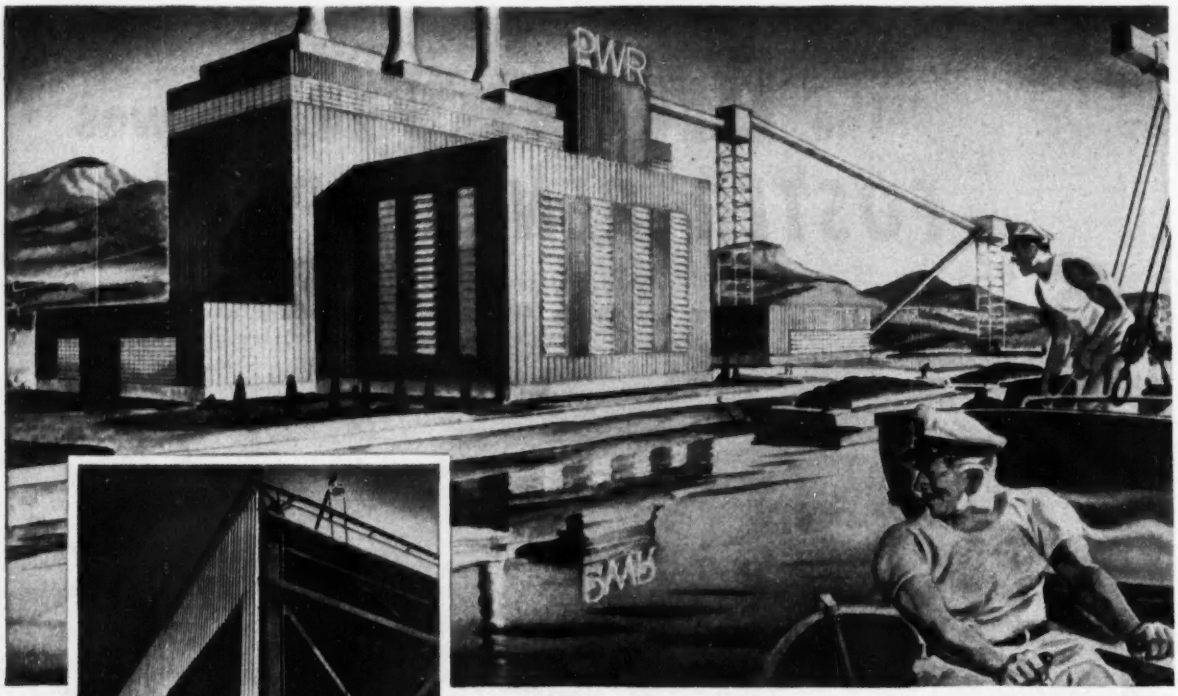
Let us quote you on our low-cost Piling Rentals — prompt service from 5 Foster warehouses. Free Piling Brochure illustrating diagrams of all standard makes of piling sections is available.

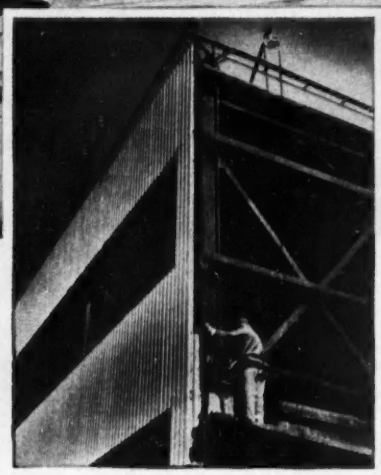
Send for Bulletin EP-2.

RAILS—TRACK EQUIPMENT • PIPE • WIRE ROPE

L. B. FOSTER CO.

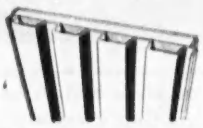
PITTSBURGH 30, PA. • NEW YORK 7, N.Y. • CHICAGO 4, ILL. • HOUSTON 2, TEX.





Modern, money-saving sidewalls for Power Plants—

and all other buildings, too!



This is a Q-Panel

First comes the flat interior (can be fluted). Then 1½" or more of non-combustible insulation. Then an exterior of stainless, aluminum, Galbestos* or metallic-coated steel in various forms. All sections are sealed against infiltration. Send for Structural details.

***Galbestos** is a Robertson product available as roofing or as an exterior surface for Q-Panels. It is made of sheet steel with asbestos felt bonded to it with molten metal. The felt is impregnated for greater durability then given a special asphaltic waterproofing. So complete is the bond that Galbestos may be shaped and worked on sheet metal equipment. Write for special Galbestos Booklet.

Builders of power plants as well as all other types of industrial and commercial structures are rapidly coming to realize the advantages of Q-PANEL sidewall construction. Q-PANEL walls provide true economy for the following reasons: 1. *Q-Panels are permanent construction, dry, and noncombustible*, yet may be demounted and re-erected elsewhere with 100% re-use. 2. *Q-Panels are light in weight* (7 pounds per square foot) thus reducing the load-bearing necessity in framing and foundations. 3. *Q-Panels have high insulation value . . .* superior to a 12" masonry wall with furred plaster interior. 4. *Q-Panels are quickly installed* because they are hung, not piled up. An acre of wall has been hung in 3 days with only 25 men. 5. *Q-Panel walls are handsome.* The exterior surface can be of various forms and either field painted, galvanized steel, stainless, aluminum or Galbestos*, thus providing a wealth of decorative combinations. *We have a booklet* available giving complete details and showing modern, lightweight, quickly-installed Q-Panels in use in many buildings. Write for it without obligation.

Robertson

Q-PANELS

for modern insulated wall construction

A Product of **H. H. Robertson Company**

2420 Farmers Bank Building • Pittsburgh 22, Pennsylvania

Offices in All Principal Cities in the United States and Canada

World-Wide Building Service

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)
All Fir: boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1 Lengths up to 20 ft. (*Prices in italics*)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	† **$79.00**	**$82.50**	**$73.50**	**$76.00**	**$79.50**	**$83.00**	**$81.00**	.....	.....
Baltimore	* **90.00**	**94.00**	**77.50**	**77.50**	**81.00**	**91.00**	**112.00**	.....	.....
	102.00g	*102.00g*	*102.00g*	*102.00g*	*102.00g*	*102.00g*	*106.00*	*$120.00*	*$120.00*
Birmingham	† **83.50**	**83.50**	**79.50**	**80.50**	**83.50**	**85.50**	**95.50**	.....	.....
	85.50	*85.50*	*80.50*	*79.50*	*78.50*	*78.50*	*85.50*	*85.50*	*85.50*
Boston	**101/106a**	**104/110a**	**95/101***	**96/106***	**98/110a**	**100/112a**	.....	.....	.....
	‡ *96.00**	*96.00*	*102/104*	*102/104*	*102/104*	*102/104*	*112.00*	*110/112*	*120.00*
Chicago	** **100.00**	**105.00**	**92.00**	**100.00**	**101/102**	**105/106**	**105.00**	.....	.....
	100.00	*101/102*	*104/105*	*108.00*	*108/110*	*108/110*	*110.00*	*110.00*	*110.00*
Cincinnati	* **99.00**	**105.00**	**88.00**	**98.00**	**105.00**	**110.00**	**122.50**	.....	.....
	109.50	*109.50*	*111.50*	*110.00*	*111.50*	*109.50*	*138.50*	*138.50*	*138.50*
Cleveland	** **96.00**	**99.00**	**86.00**	**92.00**	**98.00**	**101.00**	.....	.....	.....
	.....	.....	*103.00*	*104.00*	*104.00*	*104.00*	*118.00*	*118.00*	*118.00*
Dallas	k† **78.00**	**80.00**	**69.00**	**58.00**	**59.00**	**59.00**	.....	.....	.....
Denver	*	*Not in stock*	*128.00*	*128.00*	*126.00*	*130.00*	*135.00*	*159.00*	*186.00*
Detroit	‡ **110.00**	**115.00**	**101.00**	**110.00**	**114.00**	**118.00**	.....	.....	.....
	101.50	*102.50*	*110.50*	*111.25*	*110.25*	*109.00*	*118.75*	*122.50*	*122.50*
Kansas City	* **122.00**	**122.00**	**122.00**	**122.00**	**122.00**	**122.00**	.....	.....	.....
	122.00	*122.00*	*122.00*	*122.00*	*122.00*	*122.00*	*147.50*	*157.50*	*157.50*
Los Angeles	1 *96.00*	*96.00*	*96.00*	*96.00*	*96.00*	*96.00*	*114.00*	*124.00*	*114.00*
Minneapolis	# *130.00*	*130.00*	*135.00*	*135.00*	*135.00*	*135.00*	*150.00*	*150.00*	*150.00*
Montreal	ab85.00	90.00	85.00	90.00	100.00	100.00	.....	.....	.....
	175.00	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*170.00*
New Orleans	† **100.00**	**100.00**	**92.50**	**85.00**	**90.00**	**94.00**	**118.00**	.....	.....
	† *85.00*	*95.00*	*95.00*	*90.00*	*95.00*	*92.00*	*100.00*	*120.00*	*112.00*
New York	! **109/114**	**112/117**	**110/115**	**115/120**	**120/125**	**125/130**	**150/160**	.....	.....
			Range from $115.00 to $120.00				*150/145*	*144/155*	*144/155*
New York	** **96.00**	**99.00**	**82.00**	**95.00**	**97.00**	**100.00**	**125.00**	.....	.....
	98.00	*98.00*	*101.00*	*101.00*	*101.00*	*101.00*	*110.00*	*120.00*	*120.00*
Philadelphia	‡		**Range from $114.00 to $127.00**				**114/127**	.....	.....
			Range from $125.00 to $150.00				*130/140*	*150.00*	*150.00*
Pittsburgh	†		**Range from $90.00 to $95.00**			**110/120**	**110/120**	.....	.....
			Range from $110.00 to $120.00			*130/140*	*130/140*	*140/155*	*145/155*
St. Louis	fc**115.00e**	**115.00e**	**106.00d**	**112.00e**	**116.00e**	**121.00e**	.....	.....	.....
	.....	.....	*110.00d*	*118.00e*	*118.00e*	*118.00e*	*195.00e*	*195.00*	*195.00*
San Francisco	A† *67.00*	*68.00*	*71.00*	*70.00*	*69.00*	*67.00*	*68.00*	*69.00*	*69.00*
Seattle	† *80.00g*	*80.00g*	*80.00g*	*80.00g*	*80.00g*	*80.00g*	*85.00g*	*85.00g*	*85.00g*

	LONG LEAF Y. P. Merchantable grade up to 20 ft.		PLYWOOD Rail freight increment (See note for base price)	
	2x12 Rgh	12x12 Rgh	¼"	¾"
Atlanta	.....	.....	$22.32	$27.24
Baltimore	**$155.00**	**$155.00**	25.92*	31.60*
Birmingham	**115.50**	**155.50**	21.78	26.58
Boston	.....	.....	25.92*	31.60*
Chicago	**134.00**	**134.00**	22.45*	27.37*
Cincinnati	**145.00**	**145.00**	25.00*	30.48*
Cleveland	.....	.....	25.37*	30.93*
Dallas	**97.00**	**98.00**	18.72	22.80
Denver	.....	.....	13.92	16.98
Detroit	.....	.....	25.00*	30.48*
Kansas City	.....	.....	16.56	20.16
Los Angeles	.....	.....	16.61*ab	20.25*ab
Minneapolis	.....	.....	19.89*	24.25*
Montreal	.....	.....	.....	.....
New Orleans	**148.00**	**140.00**	18.72	22.80
New York	**210/240**	**210/240**	25.92*	31.60*
New York	**190.00**	**190.00**	.....	.....
Philadelphia	**200/210**	**200/210**	25.92*	31.60*
Pittsburgh	**110/120**	**115/125**	25.92*	31.60*
St. Louis	.....	.....	18.72	22.80
San Francisco	.....	.....	12.22*a	14.91*a
Seattle	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. sad.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* a Spruce b Tax exempt. c 5M lots. d 8–12 ft. lengths. e 8–16 ft. lengths. f 18 ft. or under. g No. 1 common. i 8 ft. lengths. k No. 3 common. l 8–10 ft. lengths. n ½ #1, ½ #2 & ½ #3.

A Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD: Plyform grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¼", $169.00; on ¾", $191.00. Exterior plyform ¼" $189.00, ¾" $213.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. a Lower rate by water shipment. b 50,000 lb. minimum.

* Incl. new freight rates. Rates for other cities not avail. as we go to press.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS: Discounts from jobbers list, Feb. 1, 1950a Single or Double Thickness A quality	B quality	EXPLOSIVES: Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	79%	80%	$0.2315
Baltimore	76%d	78%d	.2315
Birmingham	83%	83%	.1790
Boston	79–10%	79–10%	.2315
Chicago	78%	78%	.2315
Cincinnati	78%	78%	.2315
Cleveland	78–10–10%	78–10–10%	.2715
Dallas	75%	75%	.2390
Denver	81–5%	81–5%	.2365
Detroit	78–10–10%	78–10–10%	.2315
Kansas City	80–10%	80–10%	.2365
Los Angeles	75%	80%	.2340
Minneapolis	78–10%	78–10%	.2365
Montreal	40–5%bc	40–10–5%b	21.60bi
New Orleans	78%	77%	.2365
New York	82–10%	82–10%	.3975g
Philadelphia	78%	80%	.2315
Pittsburgh	82%	82%	.2040
St. Louis	80–10%	80–10%	.2365
San Francisco	70%	70%	.2315
Seattle	75%	78%	.2340

Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40%

Glass: a Jobbers' list price per box, 14 x 20, as, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. b Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. c Single thickness. d Discount 6/15/52.

Explosives; * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. h F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $23.35. i F.o.b. Beloeil (near Montreal).

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Solomograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.179	$0.2115	$0.2315
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.184 – .1915	.2165–.224	.2365–.244
Rocky Mtn. States	.184 – .1965	.2165–.224	.2365–.249
Pacific N. W. States	.1815–.194	.214 – .2265	.234 – .2465
Pacific S. W. States	.179 – .1865	.2115–.214	.2315–.2365

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail: Pine*	Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in. — 2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in. — 2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in. — 2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in. — 3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in. — 2-ft. from butt	6-in.	50 to 69-ft.	.50/.68	....
14-in. — 2-ft. from butt	6-in.	70 to 79-ft.	.78/.83	.93
14-in. — 2-ft. from butt	5-in.	80 to 85-ft.	.83/.93	.94
14-in. — 2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in. — 2-ft. from butt	5-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak	....	....	....	....
	Pine	....	....	....	....
New York	S. L. Sap Pine	$2.55	$4.35	$3.45	$5.45
	Mixed Oak	3.10	4.65	3.70	5.95
Birmingham	Hardwood	2.40	3.88a	2.85	4.58a
Chicago	Red Oak	....	4.00a	....	5.00a
Los Angeles	Douglas Fir	....	....	....	....
	Redwood	....	....	....	....
Philadelphia	Red Oak	2.55	3.90	3.45	5.10
St. Louis	White Oak	3.04	....	3.85	....
	Red Oak	2.94	3.60a	3.67	4.68a
	Sap Pine or Cypress	3.41a	....	4.44	....
San Francisco	Douglas Fir	2.20e	3.25ef	2.92bf	4.30eaf
Montreal	Birch or Maple	....h	....h	....h	....h

Tr.— Treated; Untr.— Untreated. a Creosoted. b 7" x 9" x 8'. c Empty cell. e Green. f F.o.b. cars. h No constant price available. i Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.0875
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	25.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.10
Soda ash, 58%, in paper bags, per 100 lb. dense	1.60
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.65
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	8.95

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE — PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, In paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	$195.00	$207.50	$247.50	$327.00	$342.00	$381.50	$27.38	$27.38	$19.00	$17.50	$17.50
Baltimore	183.00	195.00	366.00	415.00	541.00	618.00	36.00*k*	41.00*k*	30.00	21.00	....
Birmingham	126.00*p*	142.00*p*	237.00*p*	284.00*p*	.....	.....	23.50*ff*	28.00*gg*	26.37	17.10	....
Boston	196.00†	209.00†	392.00†	383.25†	.....	.....	34.50*p*	37.50*p*	30.00†	28.00†	....
Chicago	135.00	145.00	280.00	.... ..	.....	. .	23.00	25.00	30.80	26.00	....
Cincinnati	185.00*j*	195.00*j*	340.00*jdd*	.....	.....	.....	34.50*j*	46.00*j*	26.37*j*	24.62*j*	.....
Cleveland	172.00**	183.00**	.....	.....	.....	.....	32.00	32.00	25.50	23.50	31.00*ee*
Dallas	.....	118.00	.....	.....	. . .	. . .	19.75	35.25	32.00	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	40.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	127.75	136.25	255.55	.....	317.25	362.60	35.25*cc*	33.60*cc*	32.00	30.00	.....
Kansas City	115.50	122.50	245.00	245.00	303.50	367.00	25.75	26.00	30.50	24.50	27.00
Los Angeles	*r*	*r*	*r*	*r*	*r*	*r*	24.50§	.....	34.00	34.00	35.00
Minneapolis	171.50*p*	192.50*p*	386.00*p*	192.50*wp*	.....	.....	32.00*wp*	36.00	38.00*bbe*	28.00*bbe*	40.00*bbde*
Montreal	150.00*aq*	162.50*au*	300.00*au*	.....	....	.....	31.00	41.50	34.80	32.50	24.60*u*
New Orleans	170.00	170.00	310.00	380.00	.....	.....	31.00	.....	.....	28.00	28.00
New York	138.70*h*	147.90*h*	203.40*eh*	221.90*hn*	.....	.....	35.00	.....	36.00	32.00	.....
Philadelphia	126.30	134.80	252.60	302.74	361.35	.....	32.00	42.00	25.00	23.00	2.97
Pittsburgh	112.00	117.00	189.00	216.00	279.00	317.00	36.00	46.00*y*	25.00	23.00	2.97*m*
St. Louis	156.50*ee*	166.00*ee*	279.00*ee*	465.00*ee*	.....	.....	40.00*sl*	36.25*s*	.85*aaa*	.65*aaa*	1.10*aaspes*
San Francisco	156.85*a**	177.10*a**	235.30*dda**	.....	.....	.....	37.00	.....	26.60	26.60	2.65*m*
Seattle	175.00*ee*	190.00*ee*	.....	190.00*eew*	.....	.....	39.00*s*	49.00*s*	37.50*ahh*	1.45*f*	3.90*mhh*

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 x 12 in.-3 cell. *d* Pulverized hot. *e* 5%, 10th following month. *g* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *j* Truck load or over. *k* $1.00 discount *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed title. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11¼. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. § F.o.b. yard. ‡ Per 60 lb. sack, no incr., ton price no longer quoted. ** Warehouse delivery. * F.o.b. Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) Dry *a*	bbl.	WHITE LEAD Per 100 lb. in 100 lb. cases in oil *w*	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING*SUPPLIES Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$17.00		$28.275	$1.75	$2.70	$1.65	$2.06‡	$2.06‡	$2.06‡	$1.00‡	$36.00‡
Baltimore	16.75		27.90	2.65	4.10	3.22	2.50	4.17	4.17	.42	37.00
Birmingham	17.00		28.275	3.90	3.40	....	2.80	2.75	2.75*b*	....	42.00*ee*
Boston	16.75		27.90	....	...	....	2.67*qq*	2.79*qq*	2.79*qq*	.42*g*	42.00*g*
Chicago	16.75		27.90	....	. .	...	2.73‡*u*	3.04‡*o*	3.04‡*o*	38.00‡*bbr*	43.00‡
Cincinnati	16.75		27.90	..	....	....	2.50	2.50	2.50	.42*y*	42.36
Cleveland	16.75		27.90	2.39*pgg*	2.89*gg*	2.31*gi*	2.90*q*	2.90*o*	2.90*o*	.43*y*	37.00*hh*
Dallas	17.00		28.65	....	4.05	....	3.50*q*	3.75*o*	4.35*o*	.36	46.00
Denver	17.25		28.40	3.07	5.15	2.87	3.31*o*	2.40*o*	2.40*o*	.43*ff*	44.00
Detroit	16.75		27.90	2.35	3.40	2.50	2.75	2.50*j*	2.50	.51	40.00
Kansas City	16.75		28.02	....	2.71*ys*	2.65	2.50	2.50*o*	2.50*o*	.313*y*	48.00
Los Angeles	16.75		28.15	3.30*n*	4.50*n*	4.20*n*	2.97*n*	2.01*en*	*l*	.44*n*	*l*
Minneapolis	16.75		29.88/28.02	....	....	....	2.40*idd*	2.50*hidd*	2.50*hidd*	.36*idd*	40.70*r*
Montreal	....		21.95	2.95*Dff*	4.05*Eff*	3.35*Fff*	4.82*t*	3.65*tf*	3.65*tf*	1.24*kt*	3.78*kt*
New York	16.75		27.90	....	....	....	2.50	2.50*o*	2.50*o*	.36*z*	40.70*
Philadelphia	16.75		27.90	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	16.75		27.90	2.65	2.85	3.15	2.60	2.93*o*	2.93*o*	.33	45.00
St. Louis	16.75		27.90	....	....	....	2.50	2.50*h*	2.50*h*	.33*y*	38.00
San Francisco	16.75		28.15	2.40	....	....	3.40	2.95	4.00*aa*	.49	....
Seattle	16.75		28.40	2.96*m*	2.80*m*	....	3.58*mqcc*	3.05*hmcc*	....	.59*mcc*	52.00*jmc*

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *g* F.o.b. yard, Roxbury. *h* Per roll. 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* F.o.b. city. *o* Per 60-lb. *p* 6-drum. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *s* 466 Med. † Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large paint contractors is $1.25 less. *x* Mineral surfaced. *y* 55-gallon container; *z* Drums. *aa* Approximate cost per 100 lbs. *bc* Roofers coating and cement. Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal. drums. *gg* F.o.b. factory. *hh* Incl. freight; *D*, Std Black. *E* Ready-mixed, *F*, Over 80% ferric oxide. * Aver. wt. approx. 500 lbs

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const.
Atlanta	$2.90	$2.35	$2.60	$2.25	$2.75	$2.60	$2.90	$1.13	$1.13
Baltimore	3.20*d*	2.58	3.125*i*	2.85/3.00	2.75	2.875	2.875*i*	1.565*i*	1.565*i*
Birmingham	3.00	2.24*D*	2.50	2.16	2.52	2.75	2.65	1.225	1.325
Boston	3.06*	2.625	2.82	3.00	3.05	3.00*d*	2.90*d*	1.99*	1.99*
Chicago	3.25*k*	3.00*m*	3.05*	2.80	3.43*	3.212*f*	3.09*	2.20*m*	2.20*m*
Cincinnati	3.12	2.625	2.815	2/2.80/3.05	2.90	2.90	2.90	1.92	1.92
Cleveland	3.12	3.075*d*	3.075	3.075	3.075	3.075	3.07*C*	2.325	2.325
Dallas	3.4375	2.4875	2.625	2.50	3.437	2.75	2.7625	1.325	1.35
Denver	3.45	2. 625	2.50	2.63	3.30	2.90	2.82	1.725	1.725
Detroit	3.18**	2.93**	3.18**	2.90	3.31**	3.05	3.00*	2.18**	2.18**
Kansas City	3.50	2.55	2.68	2.515/2.76	3.175	2.70	2.90	1.88	1.88
Los Angeles	3.175	2.57	2.85*	2.45	3.437	2.75	2.90	1.94	1.94
Minneapolis	3.05	2.55	2.72	2.50	2.90	2.71*n*	2.70	1.82	1.82
New Orleans	2.95	2.32	2.65	2.50	2.825	2.65	2.65	1.225	1.225
New York	3.85*hr*	3.24*D*	3.50*B*	3.50*B*	3.95*A*	3.705*as*	3.445*bp*	2.05	2.05
Philadelphia	3.61*i*	2.90	3.32*i*	3.05/3.30	3.475*b*	3.45*	3.20*	1.75	2.05
Pittsburgh	3.40	3.00	2.875	3.00	3.15	3.00	3.00	1.90	1.90
St. Louis	3.55*c*	2.90*h*	2.90	2.95	3.00	3.00*c*	2.90*B*	1.97	1.97
San Francisco	3.40*hkr*	2. 705	2.85	2.56	3.125*	3.00	2.90	1.85	1.85
Seattle	3.30	2.58	2.78	2.71	3.15	2.80	2.75	2.18	2.14
Montreal*†	1.90	1.70	1.80	1.60	1.90	1.80	1.85	1.20	1.20

* Cost of living bonus now included in basic wage. ‡ Includes 5¢/hr tool replacement. † Plus 2% vacation pay.

a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vac. stamp fund for bricklayers; 4% for electricians plus 7¼¢ WF. *d* Incl. 10¢ H&WF. *e* Incl. 6¢ H&WF. *f* Incl. 6% WF. *g* Incl. 11½¢ WF. *h* $2.45 homes & housing plus 5¢ VF. *i* Incl. 3½% WF and 15¢ PF. *j* Incl. 9¢/hr WF. *k* Incl. 7½¢/hr WF. *l* Incl. 4% VF. *m* Incl. 5¢/hr WF. *n* Incl. 6¢/hr WF. *o* Incl. 3% WF. *p* Incl. 3% WF, 3% PF. *r* Incl. 3% WF and 20¢ PF. *s* Incl. 5% W&PF, 4% VF, 1% NC, 6 PH. *t* Incl. 7½¢ H&WF. *u* Incl. 1½% WF. *v* Incl. 10¢ WF. *w* Negotiating. *x* Await. WSB appr. *z* Incl. 8% WF. *aa* Incl. 7½¢ IF, 5¢ H&WF. *dd* Incl. 10¢ WF, 10¢ PF & 10¢ VF. *ee* Incl. 3% WF, 6 PH. *ff* Incl. 7¢ IF. *D* Dec. revised. *E* Plus 5% WF, plus travel pay per day.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Dec.'52	Jan.'53
Common Wages—Building (8 hr. day)	av. per hr.	1.06*	1.06*
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	1.25*	1.25*
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	2.25*	2.25*
Bricklayers (8 hr. day)	av. per hr.	2.25*	2.25*
Struct. Iron Workers (8 hr. day)	av. per hr.	1.50*	1.50*
Struct. Steel Shapes			
3"–15" x 12 meters	per metric ton	1,193.13	1224.23
Reinf. Steel, Corr. Rods			
⅜" x 11 meters	per ton	1,355.67	1386.77
½" x 11 meters	per ton	1,344.46	1375.56
⅝" x 11 meters	per ton	1,333.25	1364.35
¾" x 11 meters	per ton	1,322.04	1353.14
⅞" x 11 meters	per ton	1,322.04	1353.14
1" x 11 meters	per ton	1,322.04	1353.14
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	50.00	50.00
Rose Gravel	per tr. load	47.00	46.00
Cement, Std. Port. (Toltecа)	per ton	160.00	160.00
Lumber			
Mex. Sacred Fir (OYAMEL)	per M ft.	750.00	750.00
1st Class Pine	per M ft.	1400.00	1400.00
2nd Class Pine	per M ft.	1100.00	1200.00*

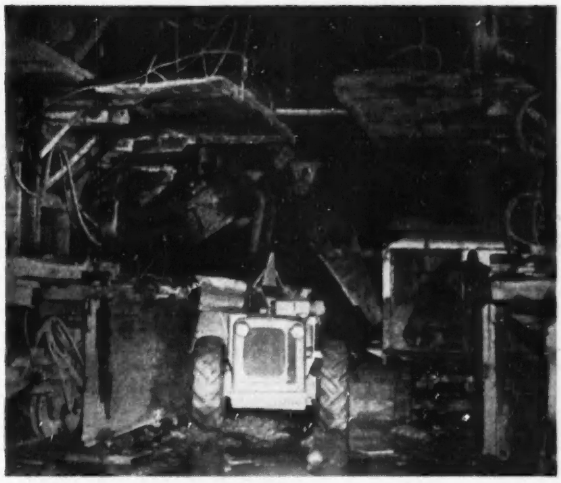
* Increase by 1/6th—work 6 days, paid for 7 days.

ENR Skilled Average: (Bricklayers, Carpenters, Ironworkers): $2.946 **ENR Common Average:** $1.817

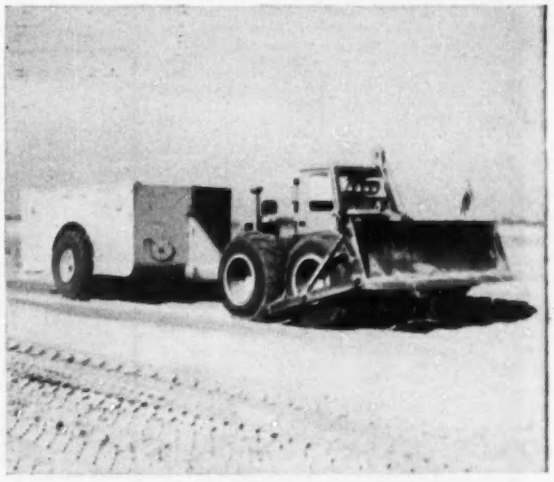
(ADVERTISEMENT)

LeTourneau pictures of the month . . .

NEW HOLLYWOOD STARS — Maybe these C Tournapulls aren't as pretty as a movie queen, but Contractor Perry Tomei is pleased with their Hollywood work. Building the new 360,000-yd Freeway section from downtown Los Angeles through the movie capital, the "C's" did the job better and quicker than tractors and scrapers could, according to Contractor Tomei. Despite heavy traffic, cramped quarters, rocky material and 10 to 24% grades, the 4 "C's" removed 384 pay yds hourly on average 2300-ft cycles. Each machine carried 12 pay yds per load, delivered an average of 8 loads per 55-minute hour.



"TOUGHEST TUNNEL" — Halfway into a 3226-ft tunnel for B & O RR, Chicago Contractors Bates & Rogers struck an abandoned coal mine. Resulting complications turned their routine job into "one of the toughest RR tunnels ever built." Their 10-yd Tournarockers, with 12¾-ft turn radius, were only haulers that could turn 180° non-stop and maneuver in the 31-ft-wide passage. Same size trucks had to be turned on a skid plate.



PULLS 50-TON COMPACTOR — 186 hp Tournatractor tows 50-ton compactor on Grumman Aircraft's new $25 million Peconic River Plant on Long Island, NY. Compactor was used to stabilize sub-base of runways and taxiways being built on part of the 4,700-acre project. Traveling between jobs, tractor often hit 19 mph. Photo of L. G. Defelice units courtesy Constructioneer magazine.

Continued on next right-hand page . . .

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y
ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Me., Presque Isle**—AIRCRAFT FUELING SYSTEM—B.A. 2/17—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., aircraft fueling sys., Presque Isle Air Force Base, Eng. 19-016-53-60. $300,000. Plans deposit $10, refundable, Hayden, Harding & Buchanan, 810 Park Square Bldg., Boston, Mass., engrs.-archts. CD 1/9.

† **Mass., Falmouth**—AIRCRAFT FUELING SYSTEM—B.A. 2/17—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., aircraft fueling sys., Otis Air Force Base, Eng. 19-016-53-59. $500,000. Plans deposit $10, refundable. CD 1/9.

BIDS ASKED—BUILDINGS

Mass., Westwood—SCHOOL—B.A. 2/10—Town, School Bldg. Comn., E. W. Thurston, supt., Deerfield Ave., elementary school, Islington Sect. $500,000. Plans deposit $50. Kilham, Hopkins, Greeley & Brodie, 9 Arlington St., Boston, archts. CD 1/20, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Daniel O'Connel's Sons, Inc., 480 Hampden St., Holyoke, Mass. LB $536,926, est. $432,000. reconstr. section hy., Cummington;
M. F. Roach Co., 26 Central St., East Bridgewater, Mass. LB $184,712, est. $171,000, hy. Telegraph Hill, Provincetown. Bids Jan. 20. CD 1/8.
Susi & De Santis Co., 314 Beach St., Roslindale, Mass. LB $65,562 Item 1-16, $61,602 alternate, est. $60,000. Contr. 1, furnishing, laying water mains, WOBURN, MASS. City, Dpt. P. Wks., City Hall, Woburn, Mass. Bids Jan. 19. CD 1/14.

BUILDINGS

LOW BIDS AND CONTRACTS

Worthington Pump & Machine Corp., 31 St. James Ave., Boston, Mass. CA $114,590, est. $100,000. Contr. 1, two GENERATOR UNITS and install, Mass. Proj. PM-19, DANVERS, MASS. State Dpt. Mental Health, 15 Ashburton Pl., Boston, Mass. Leo Crowley, 120 Tremont St., Boston, Mass., engr. CD 12/4/51.

▲ **Tornabene Bros. Co.**, 170 Needham St., Newton, Mass. CA $1,325,000, est. $1,125,000. HIGH SCHOOL Pleasant and Union Sts., HINGHAM, MASS. Town, School Plan & Constr. Comn., c/o Supt. Schools, 299 North St., Hingham, Mass. CD 1/20. under LB.

M. J. Walsh & Sons, Inc., 14 Shawmut Ave., Holyoke, Mass. CA $922,630, est. $900,000. HOSPITAL, Proj. Mass 46-C, Lower Westfield Rd., HOLYOKE, MASS. City, Dpt. P. Wks., City Hall, Holyoke, Mass. CD 1/20, under LB.

▲ **John A. Volpe Constr. Co.**, 54 Eastern Ave., Malden, Mass. LB $1,094,000, est. $1,065,000. DORMITORY on campus, MEDFORD, MASS. Tufts College, Admin. Office, Presidents Office, Medford, Mass. Bids Jan. 22. CD 1/13.

John A. Volpe Constr. Co., Inc., 54 Eastern Ave., Malden, Mass. CA $883,344. Junior-Senior High SCHOOL addn., Linwood Ave., Whitinsville, NORTHBRIDGE, MASS. Town, School Dpt., Junior-Senior Addn. Bldg. Comn., P. B. Walker, chn., Hill St., Northbridge, Mass. CD 1/13, under LB.

▲ **Alfred Benoit**, 181 Pleasant St., Worcester, Mass. CA. Est. $1,800,000. 180 RESIDENCES, ROCHDALE, MASS. Chasco Real Estate Co., Bert Chase, pres., 181 Pleasant St., Worcester, Mass.

Peter Navarro, 33 Summit Rd., Medford, Mass. CA Est. $150,000. meat, processing PLANT, 40 E. Way St., ROXBURY, MASS. Mantreg Realty Co., 52 North St., Boston, Mass. Thomas Worcester, Inc., 85 State St., Boston, Mass., engr.-archt.

Vappi & Co., Inc., 240 Sidney St., Cambridge, Mass. CA $375,000. design and construct. WAREHOUSE and OFFICE, 50 N. Broadway, EAST PROVIDENCE, R. I. Cabot-Cabot & Forbes, Inc., 60 State St. Boston, Mass. E. I. duPont de Nemours & Co., Inc., 808 Hospital Trust Bldg., Providence, R. I., lessee.

▲ **Naval Gardens Apartments, Inc.**, c/o Mitola Bros., Inc., (Sponsor), Georgian Ct., Providence, R. I. Own Forces. Approx. $1,000,000. 1 construct, manage finance HOUSING for enlisted men and officers, NEWPORT, R. I., for Dpt. Navy, First Naval Dist., Housing Admin., 495 Summer St., Boston, Mass. CD 1/23.

▲ **Wexler Constr. Co.**, 118 Needham St., Newton, Mass., LB, $1,998,000, MR-48 moderate rental HOUSING, Incl. 180 units, NEW LONDON, CONN. City New London Housing Auth., New London, Conn. Bids Jan. 23. CD 1/6.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N. Y., New York—ELECTRICAL CONVERSION, etc.—B.A. 2/17—Bd. Higher Educ., The City College Business Office, Brett Hall, 136 St. and Convent Ave., Zone 31, electrical DC-AC conversion and lighting installation at Lewisohn Stadium, The City College. Plans deposit $30.

† **Md., Camp Detrick**—ELECTRICAL DISTRIBUTION SYSTEM—B.A. 2/18—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., electrical distr. sys., Eng. 49-080-53-(46). CD 12/9.

N. Y., New York—ELECTRICAL CONVERSION, etc.—B.A. 2/18—Bd. Higher Educ., The City College Business Office, Brett Hall, 136 St. and Convent Ave., Zone 31, electrical DC-AC conversion and lighting installation Technology Bldgs., The City College. Plans deposit $30.

D. C., Wash.—B.A. 2/26—Dist. of Columbia, Director Hys., District Bldg., 14 and E Sts. N.W., Zone 4, constr. one overpass, 400 lin. ft. depressed roadways, retaining walls, trunk sewer in vicinity of East Capitol St. and Kenilworth Ave. N.E. respectively. Plans deposit $50; adv. ENR 2/5. CD 11/21/51.

BIDS ASKED—BUILDINGS

† **D. C., Wash.**—HOUSING—B.A. 2/10—National Capitol Housing Auth., 1728 L St. N.W., Wash., D. C., Section 1, housing Project DC 1-18, East Capitol Dwellings, 391 units, East Capitol St. and 58 St. N.E. Plans deposit $30. Extended date. Harrison, Ballard & Allen, 123 E. 77 St., New York, N. Y., archts. CD 12/23.

Md., Towson—SCHOOL—B.A. 2/10—Baltimore Co. Bd. Educ., Aigburth Rd., 1 and 2 story, brick, concrete block school, Sunshine Ave. $850,000. Plans deposit $30. Wm. E. Gray, 328 N. Charles St., Baltimore, archt. CD 10/6/52.

† **Md., Aberdeen Proving Ground**—CLIMATIC TESTING FACILITIES—B.A. 3/3—U. S. Eng., 24 St. and Maryland Ave., Baltimore, Phase I, concrete, steel, concrete block climatic testing facilities, environmental equip., ENG. 18-020-53-46. $750,000. Plans deposit $10. Blaw Knox Constr. Co., Farmers Bank Bldg., Pittsburgh, Pa., engr. CD 1/22.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Frazier-Davis Constr. Co.**, 1329 Macklind St., St. Louis 10, Mo., LB $2,991,000. vertical lift bridge carrying S. Park Ave. over Buffalo River, BUFFALO, N. Y. Dpt. P. Wks., City Hall, Buffalo, N. Y. Bids Jan. 15. CD 12/17.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

▲ **NEW JERSEY**—State Hy. Dpt., State Hy. Office Bldg., Trenton,

Ell-Dorer Contg. Co., 644 Nye Ave., Irvington, N. J., LB, $1,328,554, paving, bridges and retaining walls for Sections 3A and 1K of Route 25A from D.L. & W.R.R. to High St. 0.574 mi., Essex Co. Bids Jan. 23. CD 12/30.

† **Buch & Donohue, Inc.**, 790 Broad St., Newark, N. J. LB $534,697. Levee Unit 50, Flood Control Proj. Williamsport Flood Protection Proj., Serial CIV-ENG 18-020-53-40, PENNSYLVANIA. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Bids Jan. 20. CD 12/30.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Paul Tishman Co.**, 21 E. 70 St., New York 21, N. Y. LB $4,288,890, general constr.;
Heating Maintenance Corp, 220 E. 138 St., New York 51, N. Y., LB $420,275, heating and ventilating;
Jesse E. Kahn, 131 W. 21 St., New York 11, N. Y., LB $501,995, plumbing, for Van Dyke HOUSES, Sect. II, Proj. No. NY 5-13, incl. Bldgs. 14 to 22 (inclusive) in area bounded generally by Blake Ave., Powell St., Dumont Ave. and Christopher St. and by Dumont Ave. Powell St., Livonia Ave. and Stone Ave, BROOKLYN, N. Y. New York City Housing Auth., 63, Park Row, New York 7, N. Y. Bids Dec. 30. CD 12/11.

▲ **John A. Johnson & Sons, Inc.**, 303 41 St., Brooklyn 32, N. Y., LB $2,583,000, general constr. Red Hook HOUSES II, Proj. NY 5-29 in area bounded generally by southern boundary of Red Hook Playground, Dwight, Wolcott and Richards Sts., BROOKLYN, N. Y. New York City Housing Auth., 63 Park Row, New York 38, N. Y. Bids Dec. 23. CD 12/9.
Webb & Knapp Constr. Co., 270 Park Ave. New York 17, N. Y., CA $800,000. 4 story OFFICE, Roosevelt Ave. and Main St., FLUSHING, N. Y. Webb & Knapp, Inc., 383 Madison Ave., New York 17, N. Y. Rene Brugnoni & Rudolf C. P. Boehler, 270 Park Ave., New York 17, N. Y., archts. CD 8/9/46.

▲† **Carroll-Verge & Whipple**, 370 Wahconah St., Pittsfield, Mass., CA $600,000, with equip. $980,000. soundproof test PLANT for the Air Force, JOHNSON CITY, N. Y. General Electric Co. (Aeronautic & Ordnance Systems Div.), River Rd., Schenectady 5, N. Y.

▲ **Lasker-Goldman Corp.**, 50 E. 42 St., New York 17, N. Y. LB $1,266,250. Trinity Elementary SCHOOL, NEW ROCHELLE, N. Y. Bd. Educ., City Hall, 515 Main St., New Rochelle, N. Y. Bids Jan. 13. CD 12/11.
Tishman Realty & Constr. Co., Inc., 445 Park Ave., New York 22, N. Y., CA. $600,000. 17 story and penthouse APARTMENT addn., 7 Park Ave. at northeast corner of 34 St., NEW YORK, N. Y. Jacques & Leon Schwalbe, c/o David Moed, archt., 101 Park Ave., New York, N. Y.

▲ **Gotham Constr. Co.**, 501 Fifth Ave., New York 17, N. Y. CA. $1,500,000. 4 story WAREHOUSE-OFFICE, 316-38 W. 31 St., NEW YORK, N. Y. Franklin Stores Corp., 519 Eighth Ave., New York 18, N. Y. Emery Roth & Sons, 575 Madison Ave., New York 22, N. Y., archts.
M. L. Haldeman & Son, Hershey, Pa., LB $442,562, general constr. Junior-Senior HIGH SCHOOL for Perry Joint School Dist., NEW BLOOMFIELD, PA. State Public School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Bids Jan. 22. CD 1/6.
Matthew Leivo & Sons, Inc., New Castle, Pa., LB, $648,000, general constr. Junior-Senior HIGH SCHOOL for Conneaut Valley Joint School Dist., CONNEAUTVILLE, PA. State Public School Bldg. Auth., 25 and Market Sts., Harrisburg, Pa. Bids Jan. 22. CD 4/15.

† **U. S. Eng.**, 24 St. and Maryland Ave., Baltimore, Md., cancelled bids to have been opened Jan. 22. 100 mounded concrete IGLOOS, Serial ENG 18-020-53-37, LETTERKENNY, PA.

† **Hughes-Foulkrod Co.**, 1505 Race St., Phila., Pa., LB $406,544, concrete, steel, block ADMINISTRATION SERVICE bldg., Serial ENG 18-020-53-58, LETTERKENNY, PA. U. S. Eng., 24 St. and Maryland Ave., Baltimore 3, Md. Bids Jan. 22. CD 1/7.

† **Hadley Contg. & Constr. Co.**, 1213 Wood St., Phila., Pa. LB $408,386. 1 story, 30x132 ft., concrete, steel, masonry EXPLOSIVE TEST CHAMBER and UTILITY BLDGS., Army Chemical Center, Eng. 18-020-53-38, EDGEWOOD, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Bids Jan. 20. CD 1/7.

† **Construction Co. of Maryland, Inc.**, 1010 St. Paul St., Baltimore, Md. CA $749,770. three 3 story, 36 x 235 ft., rein.-con., concrete block bachelor officers' QUARTERS, ENG. 18-020-53-35, FORT GEORGE G. MEADE, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. CD 1/12, under LB.
Kirby & McGuire, 2518 Greenmount Ave., Baltimore, Md. CA $722,222 with alternates, PLANT 2 BLDG.

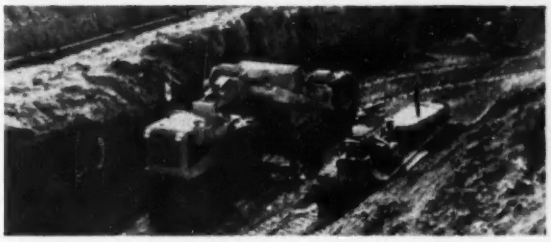
(Continued on page 106)

(ADVERTISEMENT)

LeTourneau pictures of the month (cont'd) . . .

JUNGLE-BUSTER — Carving mile-long railroad right-of-way near Chandi, India, Tournatractor quickly clears tangled jungle undergrowth and removes trees for the Great Indian Peninsular RR. Fast 186 hp rig also stripped topsoil, did rough grading. Rocky ground did no damage to big 21.00 x 25 tires.

TOUGH ROPE UPS OUTPUT — Instant dump of Tournarocker, hoist of excavators, lift of cranes, churn of drills, depends on tough, long-lasting wire rope. No other rope stands up quite as well as Tournarope, say many contractors. Tournarope has 7% shorter lay, flatter twist . . . in its ½-in. size, contains 35 lbs more steel per 1000 ft than most other ropes.



SAVES $149,000 — Entire excavation for 7000-ft sewer trench to Pentagon Building, Washington, was handled by 2 D Tournapulls. Rigs cut 25-ft deep, hauled and spread material away from trench to eliminate sheathing. Estimated saving over use of big draglines (according to Contractor M. J. Bles), $149,000.

480 YARDS HOURLY — Relocating Willamette Forest Hwy (State 222) near Detroit Dam in Oregon was a scenic, though rugged, job. With the mountain beauty to inspire them, J. W. Briggs' men and their 3 C Tournapulls moved 254,800-yds of gravel, rock, and boulders over 1200 to 7800-ft cycles. On typical 1300-ft cycle, 3 units averaged 40 trips, 480 pay yds hourly.

Continued on next right-hand page . . .

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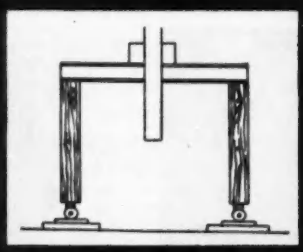

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(Continued from page 104)

AA, plating room MIDDLE RIVER, MD. Glenn L. Martin Co., Middle River, Md. CD 1/26, under LB.

Wm. H. Sands Inc., York Rd., Towson, Md. LB $399,600. brick, concrete Parkville High SCHOOL, auditorium addn., Parkville, TOWSON, MD. Comrs. Baltimore Co., Court House, Towson, Md. CD 8/27/52.

▲† George Hyman Constr. Co., 1010 Vermont Ave. N.W., Wash., D. C. CA, $4,375,000 RECEIVING BLDG. R1 and R2, St. Elizabeth's Hospital, WASH., D. C. General Services Admin., P. Bldgs. Service, General Services Bldg., Wash., 25, D. C. Bids Jan. 8. CD 1/12, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

S. C., Aiken—B.A. 2/11—City, c.i. feeder mains for water distr. sys., 38,000 lin. ft. 6- to 20-in pipe. Approx. $150,000. Plans deposit $25. Wiedeman & Singleton, P. O. Box 1878, Atlanta, Ga., engrs. CD 5/16/51.

N. C., Raleigh—SWIMMING POOLS, etc.—B.A. 2/17—Dpt. State Parks, Education Bldg., swimming pools and bathhouses in Crabtree Recreation Park area. $100,000. Plans deposit $15. L. E. Wooten & Co., 306 S. Dawson St., engrs. CD 12/1/50.

Ala., Grove Hill—B.A. 2/18—City, City Hall, WW sys. $60,000.

Va., Emporia—B.A. 2/18—Town, Town Hall, water treatment works. Plans deposit $20. Myron Sturgeon Engineers, 2124 Kimball Terrace, Norfolk, engrs. CD 8/7.

† La., Shreveport—ARMAMENT ELECTRONICS REPAIR SHOP—B.A. 2/25—U. S. Eng., 300 Broadway, Little Rock, Ark., armament electronics repair shop, Barksdale Air Force Base, Inv. 53-45. CD 1/23.

† La., Alexandria—UTILITIES—B.A. 2/28—U. S. Eng., 300 Broadway, Little Rock, Ark., Job. No. Alexandria AFB 52-ACRP-AF rehabilitation of utilities incl. repair water storage tank, water distr. sys., sewerage sys., testing and reworking existing water wells, Alexandria Air Force Base, approx. 6 mi. from here, Eng. 03-050-53-48. CD 1/21.

† Tenn., Memphis—HANGAR—B.A. 3/4—Dpt. Navy, Officer in Charge of Construction, Box 365, Naval Base, Charleston, S. C., Denver Type maintenance and operations hangar, at U. S. Naval Air Station, NOY 71563. Plans deposit $80.

† N. C., Fort Bragg—ELECTRICAL DISTRIBUTION—B.A. About 3/6—U. S. Eng., 308 Customhouse, Wilmington, electrical distr. sys., Serial No. Eng. 31-075-53-15. Plans deposit $9.20. CD 12/26/51, under Public Buildings.

BIDS ASKED—BUILDINGS

Va., Arlington—SCHOOL—B.A. 2/9—Arlington County School Bd., 1426 N. Quincy St., brick, concrete masonry Jamestown Elementary School. $400,000. Plans deposit $25. Allen J. Dickey, 704 N. Glebe Rd., archt. Beall & LeMay, 1726 "M" St. N. W., Wash., D. C., engrs. CD 11/18.

† Va., Yorktown—BUILDING ADDN., etc—B.A. 2/10—P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, Building 396 addn. and re-roofing dispensary at U. S. Naval Mine Depot, NOY 72500, Spec. 33672 Rev. Plans deposit $10.

Ala., Montgomery—CHURCH—B.A. 2/17—Capital Heights Methodist Church, c/o Pearson, Tittle & Narrows, archts, First National Bank Bldg., church. $350,000. Plans deposit $25. CD 10/15.

▲ Fla., Jacksonville—HOSPITAL WING—B.A. 2/17—St. Vincent's Hospital, c/o Reynolds, Smith & Hills, archts., 227 Park St., hospital wing. $2,000,000. Extended date. CD 1/13.

Ga., Atlanta—SCHOOL—B.A. 2/17—City Bd. Educ., City Hall, South Atlanta High School. $750,000. Plans deposit $50. Tucker & Howell, Rhodes-Haverty Bldg., archts. CD 8/27.

Ga., Atlanta—SCHOOL—B.A. 2/17—Burton Co. Bd. Educ., Court House, Rosewell High School. $500,000. Plans deposit $50. Stevens & Wilkinson, 157 Luckie St. N.W., archts. CD 9/22.

N. C., Morehead City—WAREHOUSE, etc.—B.A. 2/17—Carteret-Craven Electric Membership Corp., Morehead City, warehouse-office. $100,000. Plans deposit $25. Southern Engr. Corp., 1000 Crescent Ave. N. E., Atlanta, Ga., archts. CD 11/3 under Unclassified, North Carolina.

† Va., Fort Belvoir—SHOP, etc.—B.A. 2/17—U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C., laboratory maintenance shop, test laboratory shop and office bldg., gate house, steel shed for test laboratory, ENG 49-080-53-56-(49). Plans deposit $25. CD 10/12.

La., Lafayette—CONVENT—B.A. 2/19—Most Holy Sacrament, 409 West St., convent addn. $300,000. Plans deposit $50. Favrot, Reed, Mathes & Bergman, 402 Nola Bldg., New Orleans, archts.

Ga., Fort Valley—SCHOOL—B.A. 2/23—Peach Co. Bd. Educ., Fort Valley, training school. $375,000. Plans deposit $50. MacEwen, Hall & Ferguson, Bankers Insurance Bldg., Macon, archts. CD 8/28.

Ga., Atlanta—SCHOOLS—B.A. 2/24—City Bd. Educ., City Hall, Ridgewood Elementary School, $310,000. Plans deposit $50. Poundstone, Ayers & Godwin, Bona Allen Bldg., archts.; Sylvan Hills High School addn., $540,000. Plans deposit $50. Francis M. Daves & Assocs., 57 8 St. N.E., archts. CD 8/27.

▲ Ga., Augusta—HOSPITAL—B.A. 3/6—State Hospital Auth., State Capitol, Atlanta, Eugene Talmadge Memorial Hospital. $14,000,000. Plans deposit $100. Ex-

(Continued on page 108)

(ADVERTISEMENT)

LeTourneau pictures of the month (cont'd) . . .

15 MI. IN 88 MIN — To answer hurry-up call for fill, Taylor Bros loaded their D Tournapull with sand, then drove it 1.9 miles through heavy city traffic. In 10 minutes, unit had delivered first load. In 88 minutes, it had made 4 trips, driven 15 miles through traffic, brought in 18 cu yds of sand. Says Owner John Taylor, Birmingham, Mich, "D Tournapull is the most valuable dirtmoving machine made today for the municipal contractor."

CLEAN OVER-EDGE DUMP—With front-wheel drive, Tournarocker backs safely to edge of bank. Loads fall free and fast. Little or no dump clean-up is required. Says Red Parrot Coal Co Supt F. Mason Morgan, user of unit shown, "Tournarocker works better than any rubber-tired equipment we've used."

MORE THAN 1 WAY — When not needed for scraper work, J. W. Crowder, Houston, uses his C Tournapulls to haul from a dragline. Here, rig gets heaped load of tightly-compacted gumbo on dam and spillway construction job along the Sabine River in Texas. Rig made 2000' cycle in 3½ minutes.

PIPELAYING IN ISRAEL — Tournatractor with electric side-boom crane speeds pipelaying for vital land development near Tel Aviv. Unit carefully positions 14-ton, 60-ft section of pipe — a part of Jerusalem's first fresh-water aqueduct system. Working several yds from ditch to avoid cave-in, crane easily lifts 6 tons to a full 12 ft . . . raises, lowers load while moving forward or back. Mekoroth Water Co, owners, replaced 8 crawlers with 4 Tournatractors. For full information on this or other equipment shown, contact R. G. LeTOURNEAU, INC., Peoria, Ill.

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Perma-Rock Products, Inc. Baltimore 30, Maryland	West Indies Perlite Mfg. Co., Inc. Havana, Cuba	The Whittemore Company Roslindale 31, Mass.	Virginia Perlite Corp. Hopewell, Virginia

(Continued from page 106)

tended date. Gregson & Ellis, Mortgage Guarantee Bldg., Atlanta, archts. CD 12/30.

† **N. C., Fort Bragg**—HEATING PLANT—B.A. About 3/9—U. S. Eng., 308 Customhouse, Wilmington, central heating plant in new troop housing area, incl. utilities, and short railroad spur, Inv. No. Eng 31-075-53-16. Plans deposit $14. CD 12/26/51.

† **N. C., Fort Bragg**—SHOPS, etc.—B.A. About 3/11—U. S. Eng., Customhouse, Wilmington, one tank battalion repair shop; 4 tank company repair shops; one tank battalion oil storage bldg.; tank gas storage and dispensers; one tank battalion wash platform, incl. necessary utilities and concrete tank trails, Inv. No. Eng. 31-075-53-17. Plans deposit $11.60. CD 12/26/51.

▲ **Ala., Tuscaloosa**—SCHOOLS—B.A. 3/15—City, City Hall, Negro High School, $1,500,000; White High School, $1,500,000. Raymond Sizemore, S. Hull St., Montgomery, archt. CD 9/26/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **P. Wks. Office**, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. rejected bids Nov. 4, central heating plant and steam distr., Naval Ordnance Test Station, NOY 73598. CHINCOTEAGUE, VA. LB. **$284,917.** Will re-advertise. CD 11/7, under LB.

▲† **McLean Contg. Co.**, 2405 Kimball Terrace, Norfolk, Va., CA. **$1,283,000.** Convoy escort pier, U. S. Naval Base, NOY 74889, Spec. 35800, NORFOLK, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. Bids Dec. 23. CD 12/11.

G. E. Moore Co., Greenwood, S. C., LB. **$397,341.** sanitary sewer imprvs., GREER, S. C. City, Greer, S. C. Bids Jan. 20. CD 12/23.

Lee Constr. Co., 422 S. Church St., Charlotte, N. C. CA **$202,727**, water filtration plant addn., SPARTANBURG, S. C. City, Spartanburg, S. C. Bids Jan. 16. CD 1/2.

City, City Hall, Albany, Ga., Owner Builds, **$70,000.** swimming pool, ALBANY, GA.

▲† **A. R. Briggs Constr. Co.**, Macon, Ga., CA. **$1,248,400** administration spaces addn. to Bldgs. 1103 and 1104, Warner Robins Air Force Base, Inv. 53-27, MACON, GA. U. S. Eng., 200 E. Julian St., Savannah, Ga. Bids Jan. 16. CD 1/22, under LB.

City, City Hall, cancelled bids to have been opened Feb. 2, sanitary sewerage imprvs., KEY WEST, FLA. CD 1/8.

▲ **Blythe Bros. Co.**, 2911 Hutchinson Ave., Charlotte, N. C., and **W. T. Price Dredging Co.**, 3200 S.W. 27 Ave., Miami, Fla., CA. **$6,726,227,** Contract No. 1, 83,000 lin. ft. intercepting sewers, 14,000 lin. ft. precast concrete pipe force mains, manholes structures, 310 lin. ft. triple pipe inverted siphon incl. rein.-con. and c.i. pipe with special structures;

DeFonce Constr. Co., 110 Colonial Ave., Bridgeport, Conn., CA. **$2,454,160,** Contract No. 2, N.E. 77 St. Pumping Station 29x37 ft., 2 main sewage pumps and appurtenances at N.W. 6 Ave. and N.E. 77 St.; N.E. 55 Terrace Pumping Station, 24x28 ft., 2 main sewage pumps and appurtenances at Morningside Park; N.E. 9 St. Pumping Station 59x115 ft., 2 main sewage pumps, 3 diesel engines, Venturi vault, Venturi meter and appurtenances Biscayne Bay between N.E. 9 and 10 Sts.; N.W. 4 St. Pumping Station 59x102 ft., 5 main sewage pumps, 3 diesel engines, transformer sub station, Venturi vault, 2 Venturi meters, appurtenances, Bricknell Pumping Station, 15x23 ft., 2 main sewage pumps and appurtenances Parkway near S.E. 25 St.;

Merritt-Chapman & Scott Corp., 260 Madison Ave., New York, 16, N. Y., CA. **$1,988,878,** Contract No. 3, Biscayne Bay Force Main, 14,350 lin. ft. 72-in. rein.-con. pipe under Biscayne Bay from Bayfront Park to Virginia Key, incl. structures and appurtenances;

Paul Smith Constr. Co., 3103 N.W. 20 St., Miami, Fla., CA. **$9,217,563,** Contract No. 4, sewage treatment plant on Virginia Key incl. hydraulic fill over 80 acres, eight 1 and 2 story bldgs., 2 grit chambers, 4 aeration tanks, 4 settling tanks, 4 sludge digestion tanks with floating covers, 4 elutration and concentration tanks, sewers, conduits, channels, pipe lines equipment;

Diamond Constr. Co., Little Creek, Norfolk, Va., CA. **$1,677,670,** Contract No. 5, Virginia Key Outfall

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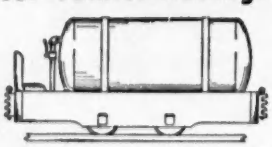

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Sewer, 12,270 lin. ft. 108-in. precast rein.-con. pipe sewer on Virginia Key, 4,650 lin. ft. 90-in. precast rein.-con. pipe sewer Virginia Key and Atlantic Ocean, MIAMI, FLA. Water & Sewer Board, 3342 Dinner Key Dr., Miami, Fla. Grand total, $22,064,498. Bids Jan. 15, awarded Jan. 23. CD 1/19, under LB.

▲† **Brinson Constr. Co.,** 51 St. and E. Broadway Ave., Tampa, Fla., and **J. D. Manly Constr. Co.,** Leesburg, Fla., LB, **$1,336,323,** airfield paving and flight hazard removal at MacDill Air Force Base, Inv. 53-41, TAMPA, FLA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. Bids Jan. 20. CD 12/15.

Wilborn Constr. Co., 830 2 Ave. North, Birmingham, Ala., LB. **$400,000** Mausoleum, BIRMINGHAM, ALA. Forest Hill Cemetery Assoc., c/o Geo. P. Turner, archt., American Life Bldg., Birmingham, Ala. Bids Jan. 20. CD 1/6.

Bd. Supervs. Hinds Co., Court House, Jackson, Miss. Owner Builds. **$73,000.** imprv. 7 mi. county road from Raymond to Clinton, JACKSON, MISS.

▲† **Westinghouse Corp.,** P. O. Box 868, Pittsburgh 30, Pa., CA **$2,070,378,** design, manufacture, delivery, installation, testing 3 giant generators for the Cheatham Lock and Dam Proj., Cumberland River, TENNESSEE. U. S. Eng., 303 Federal Office Bldg., Nashville, Tenn. CD 1/20, under LB.

▲ **City Water Co.,** City Hall, Chattanooga, Tenn. Owner Builds. **$1,000,000.** 1953 WW imprvs., CHATTANOOGA, TENN. CD 4/23/51.

Eller Bros., Madison, Tenn., CA **$105,291.** WW imprvs., CLIFTON, TENN. City, Clifton, Tenn. Bids Jan. 7. CD 12/9.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Beach Homes, Inc.,** Samuel Ehrenworth, pres., 9530 Warwick Ave., Norfolk, Va. Owner Builds. Approx. **$2,225,000.** 225 one-story frame, asbestos-cement, Tarraliton HOMES, Little Creek Rd., NORFOLK, VA.

Carolina Constr. Co., Bancroft St., Charlotte, N. C. Owner Builds. **$550,000.** 40 RESIDENCES, CHARLOTTE, N. C.

Durham Baking Co., Durham, N. C. Owner Builds. **$200,000.** rebuild BAKERY, DURHAM, N. C. CD 1/9.

Charleston Constructors, Inc., Adgers Wharf, Charleston, S. C., LB **$511,479,** Negro HIGH SCHOOL, CHARLESTON, S. C. School Dist. 20, 14 St. Phillip St., Charleston, S. C. Bids Jan. 21. CD 12/19.

Beers Constr. Co., 70 Ellis St. N. E., Atlanta, Ga., CA, **$500,000,** OFFICE, ATLANTA, GA. Equitable Life Assurance Society, c/o Armistead & Saggus, archts., Candler Bldg., Atlanta, Ga. Bids Jan. 20. CD 1/14.

Ira H. Hardin Co., Zahner Bldg., Atlanta, Ga., CA **$90,000.** WAREHOUSE addn., ATLANTA, GA. Milton Bradley Co., Forrest Rd., Atlanta, Ga.

Clarence Mobley Constr. Co., 640 11 St., Augusta, Ga., CA, **$500,000** WAREHOUSE-SHOP, AUGUSTA, GA. Electrical Equipment Co., 624 Ellis St., Augusta, Ga. CD 1/16.

Hicks & Webb Co., Wilson, N. C., Owner Builds. **$95,000.** tobacco WAREHOUSE addn., QUITMAN, GA.

A. A. Fowler, Fairmount, N. C., CA, **$89,000,** tobacco WAREHOUSE, QUITMAN, GA. W. M. Carter, Carthage, N. C.

McIntosh & Co., Inc., 119 E. Bay St., Savannah, Ga., Owner Builds. **$400,000,** 52 RESIDENCES, SAVANNAH, GA.

▲ **A. B. Newton,** 1528 Hendricks Ave., Jacksonville, Fla., Owner Builds. **$1,000,000,** 165 RESIDENCES, JACKSONVILLE, FLA.

▲ **Mackle Co.,** 2818 S. W. 22 Ave., Miami, Fla., CA, **$2,000,000,** 350 RESIDENCES, MIAMI, FLA. Enid Corp., c/o contractor.

Steel City Constr. Co., 620 4 Ave. South, Birmingham, Ala., CA, **$449,000,** 60 HOUSING units, ANNISTON, ALA. Anniston Housing Auth., Anniston, Ala. Bids Jan. 19.

Southern Wood Products Co. Maben, Miss. Owner Builds. **$100,000.** mfg. PLANT, FULTON, MISS.

T. Miller & Sons, Box 921, Lake Charles, La. CA **$454,420.** concrete, steel Southtown Senior High SCHOOL, Louisiana Ave. and College St., LAKE CHARLES, LA. Calcasieu Parish School Bd., Lake Charles, La. Bids Jan. 20. CD 12/31.

Smith Brothers Farm Service, Mansfield, La. Owner Builds. **$83,000.** WAREHOUSE, MANSFIELD, LA.

Dye & Mullins, Columbia, Miss. LB **$458,433.** distribution plant and facilities consisting WAREHOUSE and OFFICE, UTILITY BLDG., REPAIR GARAGE and TRUCK PARKING SHED, MONROE, LA. United Gas Corp., Monroe, La. Bids Jan. 20. CD 12/31.

▲ **Pittman Constr. Co.,** 2925 Franklin Ave., New Orleans, LA CA **$4,369,864.** HOUSING, Proj. LB 1-14, NEW ORLEANS, LA. New Orleans Housing Auth., 1111 Tulane Ave., New Orleans, La CD 1/16, under LB.

Barge-Thompson Co., 136 Ellis St. N. E., Atlanta, Ga. CA Est. **$500,000.** dial-toll OFFICE, Greenwood St., SHREVEPORT, LA. Southern Bell Telephone Co., Hurt Bldg., Atlanta, Ga. CD 1/9/52.

Switzer Willing Co., Trafton Ave., Lexington, Ky. LB **$999,860.** General contract 20 DWELLINGS, 144 housing units, LEXINGTON, KY. Lexington Municipal Housing Comn., Lexington, Ky. Gillig, Watkins & Wilson, 180 Walnut St., Lexington, Ky., engrs. Bids Jan. 14. CD 7/1/52.

▲ **Whittenberg Constr. Co.,** S. Floyd St., Louisville, Ky. LB $3,057,000. General contract and site imprvs. 276 HOUSING units, Proj. Ky 9-3, 50 HOUSING units,

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NON-CLOG SCREENLESS SEWAGE EJECTOR
FOR NEW INSTALLATIONS — FOR REPLACEMENT INSTALLATIONS

Pumps ALL Sewage

From Disposals • From Laundry Trays • All Household Sewage
All Industrial Sewage • All Rags and Stringy Materials
The Submersible handles anything that will pass through sewage lines

Designed

- **To operate UNDERWATER**
- **for BELOW floor level installation**
- **for installation in LIMITED SPACE**
- **for DUST-PROOF operation**

Capacities: 35 to 300 G.P.M. Heads to 45 feet

Stocked by your Jobber

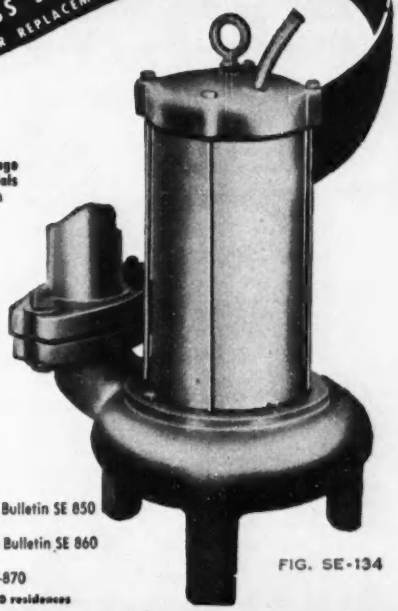

FIG. SE-134

For Residential Installation—3" discharge—½-¾-1 HP. See Bulletin SE 850
Dimensions: Dia. 17"; Hgt. 25"
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Dimensions: Dia. 23"; Hgt. 28"
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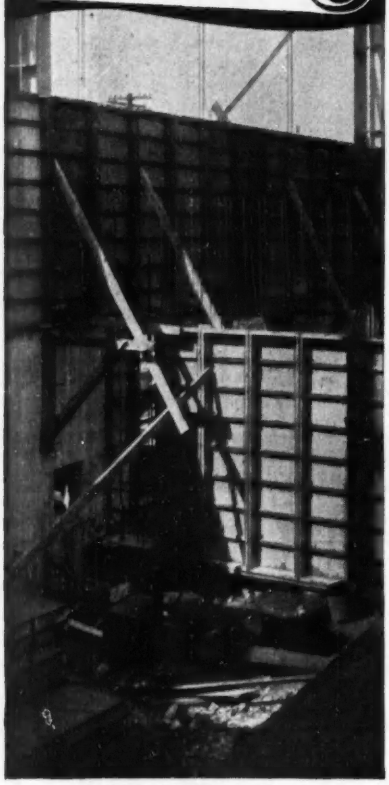

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Address_____

City_____ **Zone**____ **State**____

Proj. Ky 9-4, OWENSBORO, KY. Owensboro Municipal Housing Comn., Owensboro, Ky. Bids Jan. 9. CD 12/23.

Pennington & Mackebee, P. O. 231, LaFollette, Tenn. LB $702,671. HOUSING, Projs. Ky. 8-1, Ky 81-A and Ky 8-2, SOMERSET, KY. Somerset Municipal Housing Comm., Somerset, Ky. Bids Jan. 6. CD 12/24.

Geo. H. Rommel Co., 958 Logan St., Louisville, Ky. CA $684,000. 201x289 ft. concrete block mfg. PLANT, concrete fdn., WINCHESTER, KY. Sylvania Electric Products., Williamsport, Pa. E. R. Ronald & Assoc., 554 S. Third St., Louisville, Ky. Bids Jan. 15, awarded Jan. 22. CD 1/15.

Cavalier Corp., W. First St., Chattanooga, Tenn. Owner Builds. $250,000. PLANT addn., CHATTANOOGA, TENN.

Central of Georgia Ry. Co., H. G. Carter, ch. engr., Savannah, Ga. Owner Builds. $250,000. FREIGHT DEPOT, CHATTANOOGA, TENN.

P. W. Jameson, 611 N. Holmes St., Memphis, Tenn. CA. $500,000. remodel HOTEL, MEMPHIS, TENN. Chisca Hotel, Main St., Memphis, Tenn.

▲ **R. M. Condra Co.,** Maxwell House, Nashville, Tenn. Owner Builds. $1,000,000. APARTMENT, West End Ave., NASHVILLE, TENN.

C. C. Ball, Newport, Tenn., Owner Builds. $100,000. tobacco WAREHOUSE, NEWPORT, TENN.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Mich., Kinross**—WASHRACK—B.A. 2/11—U. S. Eng., 1900 Cadillac Tower, Detroit, aircraft washrack, Kinross Air Force Auxiliary Field. CD 8/29/51, under Mich., Sault Ste Marie.

† **Mich., Detroit**—TESTING FACILITIES—B.A. 2/12—U. S. Eng., 1900 Cadillac Tower, testing facilities, incl. equip., Detroit Arsenal.

† **Mich., Selfridge Air Force Base**—HANGARS—B.A. 2/17—U. S. Eng., 1900 Cadillac Tower, Detroit, completion existing hangars, motorizing doors. CD 7/3/51.

O., Dayton—B.A. 2/26—City, City Hall, Ridge Ave. sanitary sewer. $591,360. John Hale, city engr. CD 12/24.

BIDS ASKED—BUILDINGS

† **Wis., Antigo**—MESS HALL—B.A. 2/13—U. S. Eng., 428 Federal Bldg., Milwaukee, Zone 1, exten. mess hall, incl. exterior electrical work and walks, in vicinity of here, ENG 47-013-53-34. Extended date. CD 1/2.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—Ohio Turnpike Comn., 361 E. Broad St., Columbus, Zone 15,

Booth & Flinn Co., 1942 Forbes St., Pittsburgh, Pa., CA. $2,197,197, two spans, each 35 ft. wide and 1,394 ft. long, 20 piers and four abutments, for Maumee River Bridge, Lucas and Wood Counties. Bids Jan. 21. CD 1/22, under LB.

Charles H. Shook, Inc., 582 W. 2 St., Dayton, O., LB $839,200. sewage disposal plant addn. to double capacity from 55 m.g.d. to 100 m.g. daily, DAYTON, O. City, City Hall, Dayton, O. John Hale, city engr. Alvord, Burdick & Howson, 20 N. Wacker Dr., Chicago 6, Ill., engrs. Bids Jan. 22.

† **Green Constr. Co.,** Oaklawn, Ind., LB, $494,626 Section A, Part 2, flood protection works, Serial No. CIVENG 15-029-53-59, VINCENNES, IND. U. S. Eng., 830 W. Broadway, Louisville, 3, Ky. Bids Jan. 15. CD 12/19.

▲ **MICHIGAN**—State Hy. Dpt., Charles M. Ziegler, comr., 222 Townsend St., Lansing,

L. A. Davidson Co., 213 E. St. Joseph St., Lansing, Mich. LB $1,181,081, est. $1,240,000. rein.-con., steel grade separation Grand River Ave. over Edsel Ford Expressway, UI B 34 of 82-22-10 C1 (UI 391 49), Wayne Co.; LB $988,345, est. $1,040,000. concrete, steel, 7-span and 3-span bridge over Tittabawsee and East Tittabawsee Rivers on M-46 and M-47, F B1 and B2 of 73-20-2 (F 77 2), Saginaw Co.;

E. C. Nolan Co., Interzone, Center Line, Mich. LB $134,183, est. $140,000. rein.-con., bridge relocation US-12, over Parma Rd., FI B1 of 38-11-25 C1 FI 408 12), Jackson Co. Bids Jan. 21. CD 1/13 and 1/6.

Charles J. Rogers, Inc., 14836 Grand River St., Detroit, Mich. CA $869,289. constr., alterations water, sewer and lighting sys., on John C. Lodge Expressway along Hamilton St. from W. Grand Blvd. north to W. Chicago St., Detroit, MICHIGAN. State, Charles M. Ziegler, comr., 222 Townsend St., Lansing 13, Mich. CD 1/27, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Ben. R. Drayer, 44 W. Longview Ave., Columbus, O. CA $100,000. 1 story 60x160 ft. metal siding WAREHOUSE, COLUMBUS, O. Brown Steel Co., 753 Marion Rd., Columbus, O.

▲ **The Peoples Development Co.,** 246 N. High St., Columbus, O. Owner Builds. $50,000,000, 3,000 HOMES, west of Columbus on 1,100-acre tract near New Rome; $15,000,000, modern SHOPPING CENTER on 60-acre tract west of Columbus, near New Rome, COLUMBUS, O.

▲ **General Electric Co.,** River Rd., Schenectady 5, N. Y. CA. 4 turbo GENERATORS for Eastlake Plant, EASTLAKE, O. Cleveland Electric Illuminating Co., 75 Public Square, Cleveland 1, O. CD 9/22.

Steward Constr. Co., 730 Gill Ave., Marion, O., CA approx. $600,000. two 2 story, brick DORMITORIES (Norton and Lewis Halls) GAMBIER, O. Bd Trustees, Kenyon College, Gambier, O. Awarded Jan. 22, CD 11/21.

▲ **Warner-Kanter Constr. Co.,** 5443 Red Bank St., Cincinnati, O. CA. $200,000,000. design and construct developing North Greenhills area, incl. 10,000 HOUSES, shipping centers, schools and churches, GREENHILLS (Br. Cincinnati), O. Cincinnati Community Development Co., Burnet Ave., Cincinnati, O. CD 10/21.

A. Siegler & Sons, 4923 Lee Rd., Cleveland O. Owner Builds. $700,000. 44 ranch-type HOUSES, Commonwealth Dr. near York Rd., PARMA HEIGHTS, O.

▲ **Gibbs & Hill, Inc.,** Pennsylvania Station, New York, New York, CA, $10,000,000 design and construct White River Generating PLANT addn. Unit 5 at Centerton, 25 mi. southwest of INDIANAPOLIS, IND. Indianapolis Power & Light Co., 17 N. Meridian St., Indianapolis 6, Ind. CD 3/22/51, under Ind., Centerton.

▲ **Mississippi Valley Structural Steel Co.,** 3117 Big Bend Rd., St. Louis, Mo., CA. Approx. $5,000,000. furnishing, erecting structural steel for Clifty Creek POWER HOUSE, MADISON, IND. Indiana-Kentucky Electric Co., 30 Church St., New York 8, N. Y. Bids Jan. 20-26. CD 1/14.

Northern Builders, Inc., 4002 Addison St., Chicago, Ill., CA, $400,000, 400,000 sq. ft. FACTORY, BELLWOOD, ILL. Auto Gas Co., 2153 Fullerton St., Chicago, Ill. John D. Jarvis, 185 N. Wabash St., Chicago 1, Ill., archt. Awarded Jan. 20.

▲ **S. N. Nielsen Co.,** 3059 Augusta Blvd., Chicago, Ill., CA, $1,000,000, 197 x 268 ft., wing 50 x 116 ft., diesel ENGINE HOUSE, 76 x 197 ft. OFFICE, Wentworth and 47 Sts., CHICAGO, ILL. Chicago, Rock Island & Pacific R.R., W. B. Throckmorton, ch. engr., La Salle St. Station Chicago 5, Ill. Awarded Jan. 22. CD 1/8.

Turner Constr. Co., 105 W. Adams St., Chicago 3, Ill., CA, $785,000, PRODUCE TERMINAL COLD STORAGE, CHICAGO, ILL. Produce Terminal Cold Storage Co., 1550 Blue Island Ave., Chicago, Ill. Bids Dec. 31, awarded Jan. 14. CD 12/30.

† **B. W. Handler Constr. Co.,** 223 W. Jackson Blvd. Chicago, Ill., CA, $814,382, expansion facilities at U. S. Post Office at Van Buren, Harrison and Polk Sts., CHICAGO, ILL. General Services Admin., P. Bldgs. Service, 19 and F Sts. N.W., Wash., D. C. Bids Dec. 17, awarded Jan. 15, CD 12/23, under LB.

▲ **Herrick Real Estate Co.,** 5829 Allen Rd., Allen Park, Mich. Owner Builds. $1,300,000. 135 brick ranch HOMES, Leslie and Allen Rds., ALLEN PARK, MICH.

Jaress Constr. Co., Battle Creek, Mich. CA $597,999. general contract 2 story, brick, steel, concrete HOSPITAL addn., BATTLE CREEK, MICH. Community Hospital, Bd. Trustees, Battle Creek, Mich. CD 12/24, under LB.

▲ **Garling Constr. Co.,** 6922 N. Telegraph Rd., Dearborn, Mich. CA Est. $5,500,000. five hundred 1 story brick, frame ranch HOMES, Oakwood Blvd and Southfield Rd., Greenfield Village Park, DEARBORN, MICH. Garling Realty Co., 15620 Michigan Ave., Dearborn, Mich. CD 10/10/52.

John C. Westohal, 12274 Coyle St., Detroit, Mich. CA Est. $450,000. 2 story, bsmnt., brick, steel, Emerson Elementary SCHOOL addn., 18240 Huntington St., DETROIT, MICH. City, Bd. Educ., 1354 Broadway, Detroit, Mich. CD 12/29.

Alfred A. Smith Co., 721 E. Saratoga St., Ferndale, Mich. CA Est $750,000. 2 story, bsmnt., brick, steel, Arthur H. Vandenburg Elementary SCHOOL, DETROIT, MICH. City, Bd. Educ., 1354 Broadway, Detroit, Mich. Bids Dec. 19. CD 12/11.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **N. M., Roswell**—ROADS, etc.—B.A. 2/12—U. S. Eng., Box 1538, Albuquerque, 100,000 sq. yd. gravel surf., double bit. and hot mix surf., $160,000; water lines, $36,800; sanitary sewer and natural gas lines, $60,000, Walker Air Force Base, Inv. No. Eng 29-005-53-86. Plans deposit $50. CD 1/14.

† **Oklahoma**—B.A. 2/16—Soil Conservation Service, Dpt. Agriculture, Reg. Admin. Services Div., 3600 McCart St., Fort Worth, Tex., waterflow retarding structures, incl. earthfill embankments, on Wayne Watershed, McClain Co. (99-53).

† **Texas**—B.A. 2/19—U. S. Eng., P.O. Box 1229, Galveston, new steel sheet pile guide wall, Mud Bayou Bridge, High Island. Inv. No. CIVENG 41-243-53-52. CD 12/29, under LB.

Mo., St. Louis—LIGHTING SYSTEM—B.A. 2/24—City, Bd. P. Service, c/o Frank J. McDevitt, pres., 304 City Hall, 12 and Market Sts., Zone 3, furnishing, cleaning, maintenance the luminaries for electric street lighting sys. $720,000. Conway B. Briscoe, City Hall, dir. P. Utilities. CD 4/26/43.

† **Montana**—B.A. 2/24—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Tiber, for carload lots and Chester, two 7x12 ft. slide gates for Canal Outlet works at Tiber Dam, Marias Diversion Lower Marias Unit, Missouri River Basin Proj., Spec. DS 3875. L. N. McClellan, ch. engr. CD 7/30/45.

† **Montana**—B.A. 2/24—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Frazer, motor-operated traveling crane for

(Continued on page 113)

GMC's W450-30 SIX-WHEELER gets the extra drive for hauling like this from a revolutionary new truck engine. It's GMC's great new "302"—pound-for-pound the mightiest in trucking history. Its 145 rugged horsepower is delivered under record-shattering 7.2 to 1 compression ratio—on regular gasoline.

Built Extra-Rugged—for Extra-Rugged Jobs

NO OTHER 26,000 GVW SIX-WHEELER TODAY can zoom capacity loads up tough grades like GMC's new W450-30. It will haul over the toughest terrain with less shifting than any comparable truck in service. Extra-long, *extra-tough* springs cushion out damaging jars and jolts.

NO other 26,000 GVW six-wheeler today combines the power and rim-to-roof ruggedness you find in GMC's new W450-30.

That makes it your soundest choice for the kind of trips and tonnage that would wilt an ordinary truck. Its 145 husky horsepower is unmatched in any comparable hauler. And this mighty drive is harnessed to a rock-ribbed chassis — *all-truck* construction that defies battering off-the-road operation.

An extra inter-axle differential compensates for uneven tire wear—prevents "tire fight" caused by unequal revolutions per mile. But an optional lockout* lets you pour equal power to all four drive wheels simultaneously. The two brawny rear axles really pack a punch when you're wrestling capacity loads up "killer" grades.

But that's only part of the W450-30 story. Get the rest of it—and the surprisingly low price — from your GMC dealer. Find out for yourself why the harder you use a truck, the more you need this GMC!

*Optional at extra cost

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GASOLINE 4,800 GVW TO 90,000 GCW
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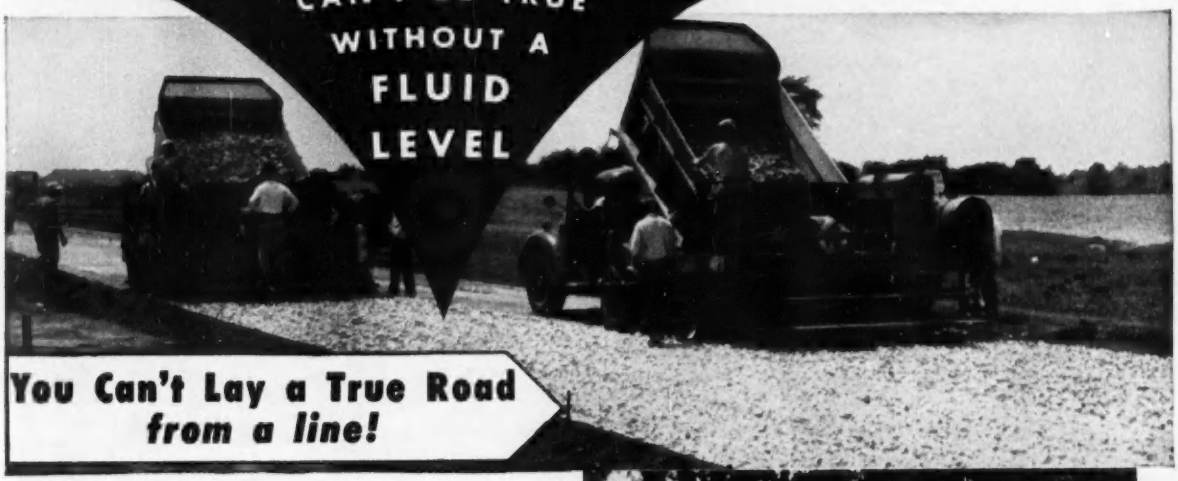

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NO black top paver, not even an Adnun, provides for the control of the level or the match of the longitudinal joints with a *line,* unless you are equipped with the Adnun Fluid Level.

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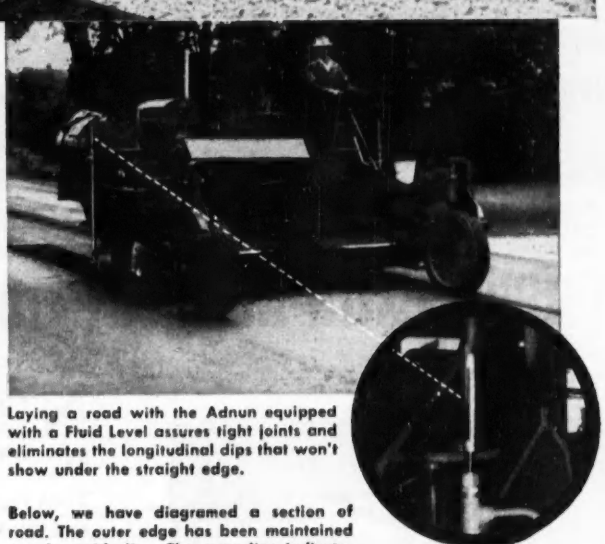
These devices are exclusively Adnun features and mean better, smoother, safer roads. You should know more about them. Let us send you complete details.



Laying a road with the Adnun equipped with a Fluid Level assures tight joints and eliminates the longitudinal dips that won't show under the straight edge.

Below, we have diagramed a section of road. The outer edge has been maintained true by guide line. The wavy line indicates what would happen without the Fluid Level where the course is obviously affected by the grade. With the Fluid Level the operator simply adjusts his screed in accordance with the indicated level of the gauge glass. The fluid tells you the course is level.

THE FLUID TELLS YOU THE COURSE IS LEVEL

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BLAW-KNOX COMPANY
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1922 STATE STREET NUNDA, NEW YORK

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(Continued from page 110)

Little Porcupine Power Plant, Missouri-Souris Div., Missouri Diversion Unit, Missouri River Basin Proj., Spec. DS 3876. CD 9/18/44.

† **Montana**—B.A. 2/26—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Frazer, fixed hoist traveling crane for Little Porcupine Power Plant, Missouri-Souris Div., Missouri Diversion Unit, Missouri River Basin Proj., Spec. DS 3879. L. N. McClelland, ch. engr. CD 9/8/44.

▲† **Tex., Kelly Air Force Base**—HANGAR—B.A. 3/20—U. S. Eng., 606 Santa Fe Bldg., Galveston, and U. S. Govt. c/o Director Procurement, Bldg. 43, Kelly Air Force Base, 1,104,000 sq. ft. airplane repair hangar and base maintenance shops. Approx. $7,500,000. Ford & Rogers and Addis E. Noonan Assoc., 803 American Hospital & Life Insurance Bldg., San Antonio, archts. CD 11/28.

BIDS ASKED—BUILDINGS

Kan., Salina—SCHOOL—B.A. 2/10—School Dist. 1, Saline Co., Heusner School addn. $750,000. J. W. Radotinsky, 1401 Fairfax Trafficway, Kansas City, Kan., archt. CD 11/20.

† **N. M., Las Cruces**—DATA REDUCTION—B.A. 2/16—U. S. Eng., Box 1538, Albuquerque, 2 story, bsmnt. 27,000 sq. ft. data reduction bldg., Inv. No. Eng 29-005-53-37. $300,000. CD 1/7.

† **N. M., Las Cruces**—TEST—B.A. 2/17—U. S. Eng., Box 1538, Albuquerque, 180x320 ft. with 60x80 ft. wing, steel frame, engineering test bldg., concrete pier and beam footings, White Sands Proving Ground, Inv. No. ENG 29-005-53-49. $775,000. Plans deposit $50. CD 1/21, under LB.

Tex., San Antonio—HIGH SCHOOL—B.A. 2/17—San Antonio Independent School Dist., Lavaca and Matagords Sts., Rhodes Junior High School, Barclay and Tampico Sts. $625,000. Plans deposit $50. Extended date. Bartlett Cocke, 3501 Broadway, and Atlee B. & Robert M. Ayres, Transit Tower, archts. CD 1/9.

Tex., Odessa—SCHOOL—B.A. 2/19—Ector County Independent School Dist., c/o Bd. Trustees, Odessa, No. 1, Elementary School (David G. Burnet). $300,000. Plans deposit $15. F. Delmar Groos & Wm. H. Clift, 1900 Kermit Hy., archts. CD 12/1.

SOON LETS CONTRACT—BUILDINGS

Tex., Amarillo—SHOPPING CENTER—W. C. Schutts, 3320 Georgia St., soon lets contract shopping center. $600,000. CD 12/1.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Booth & Olson, 529 Insurance Exchange Bldg., Sioux City, Ia. CA, **$129,462,** street imprvs., AURELIA, IA. City City Hall, Aurelia, Ia. Bids Jan. 9. CD 12/30.

Arkansas Power & Light Co., Simmons National Bldg., Pine Bluffs, Ark. Owner Builds. **$100,000.** 110,000 volt line from Jones Mill near Lake Catherine to Reynolds Metals Co. plant, Hot Springs; **$75,000,** electric sub-station to connect with 33,000 volt line from Remmel Dam, Arkadelphia, ARKANSAS. CD 6/7/50.

† **Cook Constr. Co.,** Hy. 80 W., Jackson, Miss. LB **$966,150.** relocation of Missouri Pacific R.R. Kirwin Dam, Missouri River Basin Proj. Spec. DC 3851, KANSAS. Bureau Reclamation, Dpt. Interior, Kirwin, Kan. Bids Jan. 22. CD 12/19.

▲† **Texas Constr. Co.,** 1909 N. Harwood St., Dallas, Tex. CA **$6,729,671.** Completion of Kirwin Dam 105 ft. high, 12,600 ft. long on north fork of Solomon River, near Kirwin, Phillips Co., KANSAS. Bureau Reclamation, Dept. Interior, Kirwin, Kan. CD 1/13, under LB.

▲† **Martin K. Eby Constr. Co.** 610 N. Main St., Wichita, Kan. LB **$1,073,736,** est. $1,087,060. permanent buildings, 4 dormitories, mess and admin. bldg. officers' dormitory, remove temporary bldgs., steam and utilities, distr. sys., roads, parking, drainage, etc., Smoky Hill Air Force Base, ENG 23-028-53-65, SALINA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Jan. 23. CD 12/24.

Kohler, Stover & Ivey, Gore, Okla., CA. **$831,672,** est. $900,000. Turkey Mountain Sewage Disposal Plant, TULSA, OKLA. City, City Hall, Tulsa, Okla. Bids Dec. 30, awarded Jan. 12. CD 1/6, under LB.

▲† **Benson Clearing Co.,** Commercial National Bldg., Muskogee, Okla., LB **$2,218,200,** clearing, Texarkana Reservoir Area, Bowie and Cass Counties, Inv. 53-85, TEXAS. U. S. Eng., Foot of Prytania St., New Orleans, La., Bids Jan. 21. CD 12/18.

Irby Constr. Co., 817 S. State St., Jackson, Miss., CA **$587,509,** est. $750,000. approx. 1,100 mi. rural pole telephone lines and some small brick, masonry allied bldgs., Swisher Co., TEXAS. Mid-Plains Telephone Co-operative, Tulia, Tex. Bids Jan. 14. CD 1/26, under LB.

† **Standard Dredging Corp.,** 320 Cotton Exchange Bldg., Galveston, Tex., LB **$143,157,** Unit 1, dredging Galveston Channel of Galveston Harbor and Channel, 2,220,000 cu. yd. Inv. No. CIVENG 41-243-53-44, TEXAS. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Jan. 13. CD 1/6.

James C. Williams, Rte. 7, Box 429A, Austin, Tex., LB **$267,960,** est. $325,000 pump station and raw water supply lines AUSTIN, TEX. City, Austin, Tex. Bids Jan. 20. CD 1/2.

Gulf Coast Oil Field Service Co., Box 644, Victoria, Tex., LB **$87,540,** est. $70,000. water distr. lines, CLUTE, TEX. City, Clute, Tex. Bids Jan. 15. CD 1/6.

J. J. Fritch, 6434 Harry Hines Blvd., Dallas, Tex., LB **$36,665,** some water lines, DALLAS, TEX. Dallas Housing Auth., 2525 Lucas Dr., Dallas, Tex. Forrest & Cotton, 803 Praetorian Bldg., Dallas, Tex., engrs. Bids Jan. 16. CD 1/5.

J. J. Fritch, 6434 Harry Hines Blvd., Dallas, Tex. LB **$65,220,** sanitary sewers; **$60,219,** storm sewers, open drainage DALLAS, TEX. Dallas Housing Auth., 2525 Lucas Dr., Dallas, Tex. Forrest & Cotton, 803 Praetorian Bldg., Dallas, Tex., engrs. Bids Jan. 16. CD 1/5.

J. J. Fritch, 6434 Harry Hines Blvd., Dallas, Tex., LB **$39,343.** general landscaping, sodding, mulching, etc.; **$37,118,** general site earthwork and area levelling, etc. DALLAS, TEX. Dallas Housing Auth., 2525 Lucas Dr., Dallas, Tex. Forrest & Cotton, 803 Praetorian Bldg., Dallas, Tex., engrs. Bids Jan. 16. CD 1/5.

J. J. Fritch, 6434 Harry Hines Blvd., Dallas, Tex. LB **$63,119,** streets and roads, DALLAS, TEX. Dallas Housing Auth., 2525 Lucas Dr., Dallas, Tex. Forrest & Cotton, 803 Praetorian Bldg., Dallas, Tex., engrs. Bids Jan. 16. CD 1/5.

J. J. Fritch, 6434 Harry Hines Blvd., Dallas, Tex. LB **$61,000,** natural gas lines, DALLAS, TEX. Dallas Housing Auth., 2525 Lucas Dr., Dallas, Tex. Forrest & Cotton, 803 Praetorian Bldg. Dallas, Tex. Bids Jan. 16. CD 1/5.

† **U. S. Eng.,** Box 1538, Albuquerque, N. M., cancelled bids to have been opened Jan. 20, 2 masonry well pumping houses, **$40,000;** two 200,000 gal. steel elevated reservoirs, **$45,000;** laying 47,000 lin. ft. 10- to 20-in. c.i. water mains, **$125,000;** 4 mi. access road constr., paving, drainage, **$65,000,** at Fort Bliss, Inv. No. Eng 29-005-53-63, EL PASO, TEX. CD 1/14.

† **Robert E. McKee General Contractor, Inc.,** Box 651, Albuquerque, N. M., LB **$323,290,** armament electronics instrument repair shops, Biggs Air Force Base, Inv. No. Eng 29-005-53-53, EL PASO, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Jan. 14. CD 12/11.

▲† **Robert E. McKee General Contractor, Inc.,** Box 651, Albuquerque, N. M., LB **$2,864,900.** Lots 1, 2, 3 and 4, hangar-maintenance, Biggs Air Force Base, Serial No. ENG 29-005-53-58, EL PASO, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Jan. 20. CD 1/13.

Texas Bitulithic Co., N. W. 5 St., Fort Worth, Tex., LB **$361,224,** est. $500,000. paving aprons at plant, FORT WORTH, TEX. Consolidated-Vultee Aircraft Corp., Grants Lane, Fort Worth, Tex. Bids Jan. 21. CD 12/29.

† **Harwell & Harwell,** Box 177, San Antonio, Tex., LB **$834,800,** high hp. conventional reciprocating engine test facilities bldgs., all rein.-con., Inv. No. IFB 41-608-53-310-B, KELLY AIR FORCE BASE, TEX. U. S. Govt., c/o Contg. Officer, SAAMA, Kelly Air Force Base, San Antonio, Tex. Bids Jan. 21. CD 1/14.

Cantex Paving Co., Frost Bank Bldg., San Antonio, Tex., LB **$67,117,** street imprvs., surf., SWEETWATER, TEX. City, Sweetwater, Tex. Bids Dec. 22.

STORY BEHIND THE PICTURE

Using a Sauerman rapid-shifting scraper machine, the 60 tons of clay required hourly in operating the new wet process cement mill of La Tolteca Cia de Cemento Portland, in Hidalgo, Mexico, is produced cheaply from a huge nearby hill. The scraper digs from top to bottom of the hill and delivers to a hopper at the washmill.

In former years, clay was dug from the hill with picks and shovels for a dry process mill at this same site. A gang of 58 men was used to loosen and shovel the clay into small cars that were hauled to the mill. Now one man and a Sauerman machine does all the digging and hauling as shown in the picture above.

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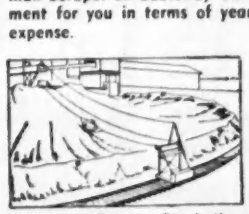

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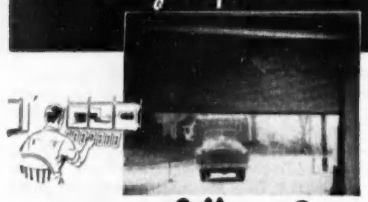

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COLORADO—State Hy. Dpt., State Hy. Office Bldg., Denver,

Dominic Leone Constr. Co., Trinidad, Colo., CA, **$163,456,** est. $160,572, asph. processing 4.157 mi. State Hy. 114 between Saguache and Gunnison, Colo. Proj. S 0124 (2), Saguache Co. Bids Jan. 21, awarded Jan. 21. CD 1/15.

COLORADO—State Hy. Dpt., State Office Bldg., Denver, **Carl V. Hill,** Greeley, Colo., CA, **$115,482,** est. $133,215 grading, stabilization, structures asph. processing 3.485 mi. State Hy. 257 and 392 between Windsor and Lucerne, Weld Co. Bids Jan. 20, awarded Jan. 21. CD 1/15.

McMillon & Pascal, 3050 S. Huron St., Englewood, Colo., LB, **$128,051,** est. $150,000, sewer lines metering system and appurtenances, DENVER, COLO. Alameda Water & Sanitation Dist., 235 S. Harlan St., Denver, Colo. Bids Jan. 19. CD 1/13.

† **Colorado Constructors, Inc.,** Maxwell, N. M., LB **$850,212.** Dams and dike for reservoir rehabilitation, Vermejo Proj., near Maxwell, Spec. DC 3860, NEW MEXICO. Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver, Colo. Bids Jan. 20. CD 12/19.

† **Miller & Smith,** 500 W. Phoenix Ave., Albuquerque, N. M., CA. **$57,838,** est. $87,900, channelization of the Rio Grande in Bernardo area, Middle Rio Grande Proj., Spec. DC-3862, NEW MEXICO. Bureau Reclamation, Dpt. Interior, Albuquerque, N. M. Bids Jan. 13, awarded Jan. 19. CD 12/23.

† **Pecos Valley Constr. Co.,** Box 766, Carlsbad, N. M., CA. **$66,278,** est. $113,200, constr. Picacho Arroyo Control North Branch Dam, Rio Grande Proj. Spec. DC-3856, NEW MEXICO. Bureau Reclamation, Dpt. Interior, U. S. Court House, El Paso, Tex. Bids Jan. 8, awarded Jan. 19. CD 12/12.

† **Robert E. McKee General Contractor, Inc.,** Box 1706, Santa Fe, N. M., CA **$653,700.** Lot 1, commissary, refrigerated storage, warehouse, Serial No. Eng. 29-005-53-55, Kirtland Air Force Base, ALBUQUERQUE, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Jan. 7, awarded Jan. 20. CD 1/14, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Bennett Constr. Co., 3252 Roanoke Rd., Kansas City, Mo. CA **$772,000.** General contract Booker T. Washington Negro High SCHOOL, 24 Terrace and Bellefontain Sts., KANSAS CITY, MO. Bid. Educ., c/o Dr. G. Dewey Smith, asst. supt., Library Bldg., Kansas City, Mo. Bids Jan. 8, awarded Jan. 22. CD 12/4/51.

L. O. Stocker Co., 3928 Lindell Blvd., St. Louis 8, Mo. CA 1 story, 92x162 ft., concrete blocks WAREHOUSE addn., 3340 Morganford Rd., ST. LOUIS, MO. Duncan Realty Co., 4389 Duncan Ave., St. Louis 10, Mo.

▲† **Weitz Co., Inc.,** 406 Fleming Bldg., Des Moines, Ia., CA, **$3,056,000.** AMMUNITION STORAGE facilities (Third Increment) at Hastings Ammunition Depot, Spec. 35908, HASTINGS, NEB. Ninth Naval Dist., Great Lakes, Ill. Bids Jan. 15. CD 12/22.

Jack A. Walsh, 224 Westchester St., Corpus Christi, Tex., LB **$759,000.** 1 story, 73,000 sq. ft. municipal AUDITORIUM, CORPUS CHRISTI, TEX. City, City Hall, Corpus Christi, Tex. Blucher & Naismith, 128 Mesquite St., Corpus Christi, Tex., engrs. Bids Jan. 20. CD 12/30.

▲ **Dow Chemical Co.,** Freeport, Tex., Purchases, Day Labor. **$5,250,000.** Est. **$6,675,000.** Ethylene dibromide PLANT, FREEPORT, TEX. CD 11/19.

Merritt & Roe Constr. Co., Edinburg, Tex., LB $701,103, Bid 1; **$706,856,** Bid 2, est. $750,000. 92 HOUSING units, tile or brick exterior, Proj. Nos. Tex. 114-1 and Tex. 114-2, KINGSVILLE, TEX. Kingsville Housing Auth., Kingsville, Tex. Boese & Harkrider, Texas & Pacific Passenger Bldg., Fort Worth, Tex., engrs.-archts. Bids Jan. 18. CD 1/21, under LB.

Oscar T. Chapman, Hutchins, Tex., CA. **$485,419.** HIGH SCHOOL, MINERAL WELLS, TEX. Mineral Wells Independent School Dist., c/o Supt. Schools, Mineral Wells, Tex. Bids Jan. 6, awarded Jan. 20. CD 1/12 under LB.

▲ **Austin Contg. Co.,** 1000 Singleton Blvd., Dallas, Tex., CA. **$16,500,000.** addnl. chemical (plastics) PLANT units, near ORANGE, TEX. Allied Chemical & Dye Corp., Orange, Tex. CD 11/19.

▲ **Carbide & Carbon Chemicals Div. of Union Carbide & Carbon Corp.,** Texas City, Tex. Own Forces. **$13,873,000.** Chemical PLANT expansion, TEXAS CITY, TEX. CD 7/23.

Starling Constr. Co., Burnet Rd., Austin, Tex., LB **$847,454.** Junior HIGH SCHOOL, VICTORIA, TEX. Victoria Independent School Dist., Victoria, Tex. Bids Jan. 20. CD 12/10.

▲ **Robert E. Nesmith, Inc.,** 6738 Long Dr., Houston, Tex. LB **$1,264,746,** est. $750,000-$1,000,000. Women's DORMITORY, WACO, TEX. Baylor University, 1401 S. 5 St., Waco, Tex. Bids Jan. 22. CD 12/17.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Calif., Miramar**—B.O.Q., etc.—B.A. 2/24—Dpt. Navy, San Diego, B.O.Q. and mess at Naval Air Station, NOY 74057, Spec. 35092. $750,000. Plans deposit $80. CD 9/22.

† **California**—B.A. 2/25—Bureau Reclamation, Dpt. Interior, Tracy, earthwork, concrete pipe lines and structures for Laterals 5.3, 6.2, 7.1, 7.3 and 9.1 Contra Costa County Water District, Contra Costa Canal Distribution System, Central Valley Project,

near Antioch, Spec. DC 3880; adv. ENR 2/5. CD 4/20/45.

† **Calif., Miramar**—PUBLIC WORKS SHOPS, etc.—B.A. 2/26—Dpt. Navy, San Diego, public works shops and office bldg., Naval Air Station, NOY 74067, Spec. 35102. $300,000. Plans deposit $30. CD 9/22.

† **Wash., Spokane**—DENTAL CLINIC—B.A. 2/26—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 1 story, 5166 sq. ft. frame dental clinic, Fairchild Air Force Base, ENG. 45-108-53-116. CD 9/18/51.

† **Arizona**—B.A. 3/3—Bureau Reclamation, Dpt. Interior, Phoenix, Cochise and Phoenix Sub-stations addns., Davis Dam Proj., near Cochise and near Phoenix, Spec. DC 3878; adv. ENR 2/5.

† **Washington**—B.A. 3/3—Bureau Reclamation, Dpt. Interior, Ephrata, earthwork, structures for East Low Canal from Sta. 2980 to Sta. 4580 and Scootney from Sta. 0 to Sta. 263, Columbia Basin Proj., vicinity of Warden, Spec. DC 4877; adv. ENR 2/5.

BIDS ASKED—BUILDINGS

† **Calif., San Francisco**—HOUSING—B.A. 2/4—Dist. P. Wks. Officer, Twelfth Naval Dist. Constr. Div., Room B-114, San Bruno, housing for ASW Sonar Trainer at U. S. Naval and Marine Corps Reserve Training Center, Treasure Island, NOY 76175, Spec. 37721. Plans deposit $10.

Calif., Baldwin Park—SCHOOL—B.A. 2/11—Baldwin Park School Dist., 3699 N. Holly Ave., 1 story, frame, stucco Health Annex School. $500,000. Kistner, Wright & Wright, 816 W. 5 St., Los Angeles, archts. CD 10/30.

Wash., Seattle—SCHOOL—B.A. 2/12—Shoreline School Dist. 412, N. 137 and Roosevelt Way 400x85 ft., rein.-con. Olympic Hills Elementary School. $500,000. Plans deposit $25. John Graham & Co., Dexter Horton Bldg., Seattle, Zone 4, archts. CD 7/16.

Calif., Lompoc—SCHOOL—B.A. 2/16—Lompoc Union School District, Lompoc, 1 story, frame, stucco Arthur Hapgood School. $300,000. Plans deposit $100. Daniel, Mann, Johnson & Mendenhall, 4201 Sunset Blvd., Los Angeles, archts. CD 10/23/51.

▲† **Idaho, Arco**—ASSEMBLY, etc.—B.A. 2/17—Idaho Operations Office, Atomic Energy Comn., 550 2 St., assembly and maintenance area and administration area for prototype aircraft propulsion reactor ground testing facilities, National Reactor Testing Station $6,000,000. Plans deposit $100. Extended date. CD 12/30.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Babbit Constr. Co.**, 1620 Taggart St., Boise, Idaho, LB. $774,200, 6 bachelor officers barracks, Mountain Home Air Force Base, Inv. 53-26, MOUNTAIN HOME, IDAHO. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Jan. 20. CD 12/16.

ARIZONA—State Hy. Dpt., 17 Aven and Jackson St., Phoenix,

Royden Constr. Co., Box 2707, Phoenix, Ariz., LB. $244,758, Tucson-Benson Hy. overpass and approaches, Cochise Co. Bids Jan. 8.

ARIZONA—State Hy. Dpt., 17 Ave. and Jackson St., Phoenix,

Kolob Constr. Co., Box 1832, Phoenix, Ariz., LB. $122,700 Oracle Junction-Globe Hy. Bridge and Roadway, Gila Co.;

Western Constructors, Inc., Box 1604, Phoenix, Ariz., LB. $124,302, 5 span steel girder bridge and approaches, Oracle Junction-Globe Highway, Pinal Co.

▲ **WASHINGTON**—State Hy. Comn., Olympia,

Peter Kiewit & Sons, Longview, Wash., CA. $1,049,094, twin steel truss span bridges with rein.-con. girder approaches 0.14 mi. Hy. 1 over Cowlitz River below Toledo, Lewis Co. Bids Jan. 20. CD 1/7.

WASHINGTON—State Hy. Comn., Olympia,

Curtis Gravel Co., P.O. Box 106, Spokane, Wash., CA. $529,090, bit. surf., rein.-con. slab bridge 7.7 mi. Hy. 5-A, Byron to Prosser, F.A.S. S 0268 (3), Benton and Yakima Counties;

Erickson Paving Co., Bellevue, Wash., CA. $466,152, clearing, draining, grading 4.4 mi. Hy. 1, Avery to Hamilton Rds., Lewis Co. Bids Jan. 20. CD 1/7.

† **Link-Belt Co.**, 400 Paul Ave., San Francisco, Calif., CA. $77,038, 8 vertical traveling water screens for Delano-Earlimart irrigation district, Unit 2, Friant-Kern Canal Distribution System, Central Valley Proj., Spec. DS 3854, CALIFORNIA Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids Jan. 6, awarded Jan. 16. CD 12/5.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles,

M. S. Mecham & Sons, 11125 Garfield Ave., South Gate, Calif., LB. $211,444, constr. 0.8 mi. hy. in Compton and Long Beach, on Artesia St., Los Angeles Co.;

James E. Roberts, 187 South G St., San Bernardino, Calif., LB. $251,728, constr. 4.8 mi. road between Calexico and Hemlock Canal, Imperial Co. Bids Jan. 15. CD 12/30.

▲† **Coastwide Constr. Co.**, P.O. Box 975, Stockton, Calif., LB. $1,556,987, battalion shop bldgs., Spec. 1698, BEALE AIR FORCE BASE, CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Jan. 21. CD 1/8.

▲ **R. A. Wattson Co.**, 12550 Saticoy St., North Hollywood, Calif., LB, $1,441,772, constr. Eagle Rock Hollywood Conduit, Unit No. 3, LOS ANGELES, CALIF. Los Angeles Dpt. Water & Power, 207 S. Broadway, Los Angeles, Calif. Bids Jan. 21. CD 1/2.

▲ **MacDonald & Kruse**, 7540 Wheatland Ave., Sun Valley, Calif., CA. $1,577,577, rein.-con. conduit, Aliso Creek from Wilber Ave. to Los Angeles River, Reseda Area, Northridge, LOS ANGELES, CALIF.

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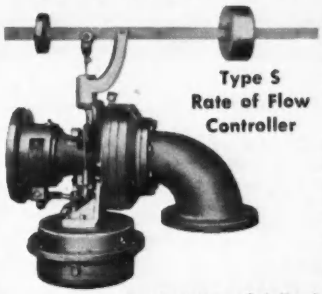

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Los Angeles County Flood Control Dist., 2250 Aleazar St., Los Angeles, Calif. Bids Dec. 30, awarded Jan. 20. CD 1/7, under LB.

† **Nomellini Constr. Co.**, P.O. Box 1177, Stockton, Calif., LB. $285,152, 8 squadron headquarters and supply bldgs., Spec. 1673, TRAVIS AIR FORCE BASE, CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Jan. 16. CD 1/8.

BUILDINGS

LOW BIDS AND CONTRACTS

G. E. Teufel Co., White Bldg., Seattle, 1, Wash., LB. $268,552, general contract;

Urban Plumbing & Heating Co., 103 S. 28 St., Tacoma, Wash., LB. $157,247, mechanical work and sprinklers, 181x765 ft. rein.-con. BAKERY, TACOMA, WASH. American Biscuit & Cracker Co., 1461 Eliot Ave. W., Seattle, Wash. Bids Jan. 20. CD 1/14.

J. P. Henck, Skyforest, Calif., CA. $781,152, Intermediate SCHOOL and ADMINISTRATION BLDG., COLTON, CALIF. Colton School Dist., Colton, Calif. Bids Dec. 19, awarded Dec. 20. CD 12/30, under LB.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Man., Winnipeg—B.A. 2/19—Greater Winnipeg Sanitary District, 455 Ellice Ave., sewage treatment plant. CD 2/28/45.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Williams Constr. Co. Ltd., 145 Vimy St., Sherbrooke, Que., CA, $130,000, two standard chapels and (P. & R. C.), R.C.A.F. Station, ST. HUBERT, QUE. Defence Constr. Ltd., 1247 Guy St., Montreal, Que. M. P. McAndrew, c/o owner, engr.

BUILDINGS

LOW BIDS AND CONTRACTS

N. De Sante Constr. Ltd., 37 Gladstone Ave., Toronto, Ont., LB, $90,000, BAKERY, 197 McCaul St., TORONTO, ONT. K. Silverstein, 25 Baldwin St., Toronto, Ont. Bids Dec. 23. CD 12/16.

Ellis-Don Ltd., 19 King St., London, Ont., LB, $90,000, GARAGE and SHOWROOM, Dundas St. E., WOODSTOCK, ONT. W. W. Boys Motor Ltd., 486 Peel St., Woodstock, Ont. Bids Jan. 8. CD 12/31.

▲ **S. D. Miller & Son Ltd.**, 699 Cote des Neiges Rd., Montreal, Que., Owner Builds. $750,000, 200x600 ft., concrete, steel, brick SHOPPING CENTER, E. Sherbrooke St., $2,500,000 200 addnl. DWELLING units, E. Sherbrooke St., MONTREAL, QUE. Eliasoph & Berkowitz, 1434 W. Ste. Catherine St., Montreal, Que., archts.

ALASKA

BUILDINGS

LOW BIDS AND CONTRACTS

† **Kincaid & King and Anchorage Builders**, Anchorage, Alaska, LB $596,089, Est. $551,179, three 2 story bsmnt., 37 x 142 ft. CIVILIAN QUARTERS BLDGS., Inv. 53-34. FORT RICHARDSON, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Jan. 22. CD 1/7.

† **Brezina Constr. Co.**, Rapid City, S. D., LB $765,981, Est. $874,000. 3 story part bsmnt., 45,000 sq. ft. concrete and masonry ADMINISTRATION BLDG., Inv. 53-35, FORT RICHARDSON, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Jan. 22. CD 12/24.

LATIN AMERICA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Gahagan Overseas Constr. Co.**, 90 Broad St., New York 4, N. Y.; **McWilliams Dredging Co.**, 903 Jeff Davis Parkway, New Orleans 7, La.; **Standard Dredging Co.**, 80 Broad St., New York, N. Y., and **Atlantic Gulf & Pacific Co.**, 15 Park Row, New York, N. Y., CA $15,000,000, dredging 40,000,000 cu. yd. in Lake Maracaibo, El Tablazo Sect., VENEZUELA. Govt. of Venezuela, Caracas, Venezuela. CD 3/5/48.

Proposed Projects

WATER SUPPLY

Miss., West Point—City, WW imprvs. $400,000, Webb & Young, Barnett-Madden Bldg., Jackson, consult. engrs. CD 4/15/52.

N. C., Sanford—Town, water facilities at Deep River, 7 mi. north of town, water plant, incl. pipe lines and tank. $852,000. CD 4/13/48.

▲ **O., Akron**—City, City Hall, 8 mi. water line main from Kent to Akron, $2,000,000. Havens & Emerson, Leader Bldg., Cleveland, Zone 14, consult. engrs., Wendell R. LaDue c/o owner, water supt., CD 7/23.

S. C., Orangeburg—City, City Hall, water filter plant addn. $350,000.

SEWERS, WASTE DISPOSAL

▲ **Ill., Chicago**—City, City Hall, Central South Side Sewerage System 3-A, $1,000,000; 1953 major sewer construction program, Beverly-Calumet System 2-B, $300,000; Kostner Ave. Sewerage System 3-B, $1,800,000; Wrightwood Ave. System sewers, Contract No. 1, $1,800,000; sewers Roscoe St. System No. 3, $1,100,000. CD 3/19/45.

▲ **Ind., South Bend**—Bd. P. Wks., Mayor Jno A. Scott, chn., City Hall, sewage treatment plant, Pin Hook Point and 1 mi. interceptor sewer along St. Joseph River from plant to city, $9,000,000. Consoer, Townsend & Assocs., 351 E. Ohio St., Chicago, Ill., consult. engrs. CD 9/14/45.

Miss., West Point—City, sanitary sewer imprvs., $425,000. Webb & Young, Barnett-Madden Bldg., Jackson, consult. engrs. CD 4/15/52.

Mo., Jennings (St. Louis 21, P.O.)—Jennings-West Walnut Manor Sewer Dist., Emmett R. Funck, mgr., 6817A W. Florissant Ave., Zone 21, voted $405,000 bonds, exten., imprv. sewerage sys., incl. inclosing of 2 creeks. Russell & Axon, 408 Olive St., St. Louis, Zone 2, consult. engrs. CD 1/2.

Mo., Warrensburg—City, City Hall, 2 sewage disposal plants, sanitary and storm sewers. $452,100-$600,000. Charles A. Haskins, 1009 Baltimore Ave., Kansas City, Mo., consult. engr. CD 1/14.

Pa., Sharon—Bd. Trustees Hickory Twp., Sharon, sewage disposal plant. $350,000. CD 7/16/46.

Tex., Houston—City, City Hall, 900 Brazos St., enlarging Sims Bayou Sewage Treatment Plant. $500,000. CD 6/6/51.

Tex., Tyler—City, (g) sewage treatment plant, $400,000; (h) some sanitary sewer collection mains, $200,000; (i) general sanitary sewerage sys. rehabilitation, $150,000.

Wis., Shorewood—Village, Village Hall, storm relief sewerage sys. $600,000. Consoer, Townsend & Assocs., 351 E. Ohio Ave., Chicago, Ill., consult engrs. CD 9/2/49.

Wis., Watertown—City, City Hall, enlarging sewage treatment plant, $600,000. Consoer, Townsend & Assoc., 351 E. Ohio Ave., Chicago, Ill., consult. engrs. CD 10/18/51.

Wyo., Rock Springs—Town, voted bonds, sewage treatment plant, pump station, sewer lines. $550,000. Robert L. Streeter, P.O. Box 2010, consult. engr. and archt. CD 12/19.

BRIDGES

GEORGIA—State Hy. Dpt., 2 Capitol Sq., Atlanta,
Richmond Co.—bridge over Savannah River on 5 Ave., Augusta. $300,000.

Mo., St. Louis—City, Frank J. McDevitt, pres., Bd. P. Service, 304 City Hall, 12 and Market Sts., Zone 3, grade separation proj. at Skinker Blvd. and Expressway at west end of Forest Park. $850,000. CD 8/10/44.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City,
Caddo Co.—bridge over Cache Creek, Hy. 58 at Apache, $340,000. G. H. Bittle, c/o owner, engr.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City,
Garfield Co.—underpass under Frisco tracks on N. Grand Ave., at Enid, $400,000. CD 10/16/46.

Oklahoma Co.—overpass on East Reno at by-pass crossing, $210,000.
grade separation on U. S. 66 at Memorial Blvd. at Watcher, $175,000. G. H. Bittle, c/o owner, engr.

▲ **Tex., Houston**—City, City Hall, 900 Brazos St., overpass, connecting Fulton and Crawford Sts. $2,500,000. H. E. White, city engr. CD 6/5/51.

▲ **Ont., Toronto**—City, A. A. Lamport, mayor, City Hall, bridges and culverts in 1953. $2,117,500. CD 10/6.

STREETS AND ROADS

ALABAMA—State Hy. Dpt., Montgomery,
Houston Co.—1953 improvements on county roads. $435,000.

▲ **Ala., Mobile**—Mobile Co., Court House, imprv. 127 mi. county roads, $4,000,000. Ewin Eng. Corp., P. O. Box 461, consult. engrs. CD 12/12.

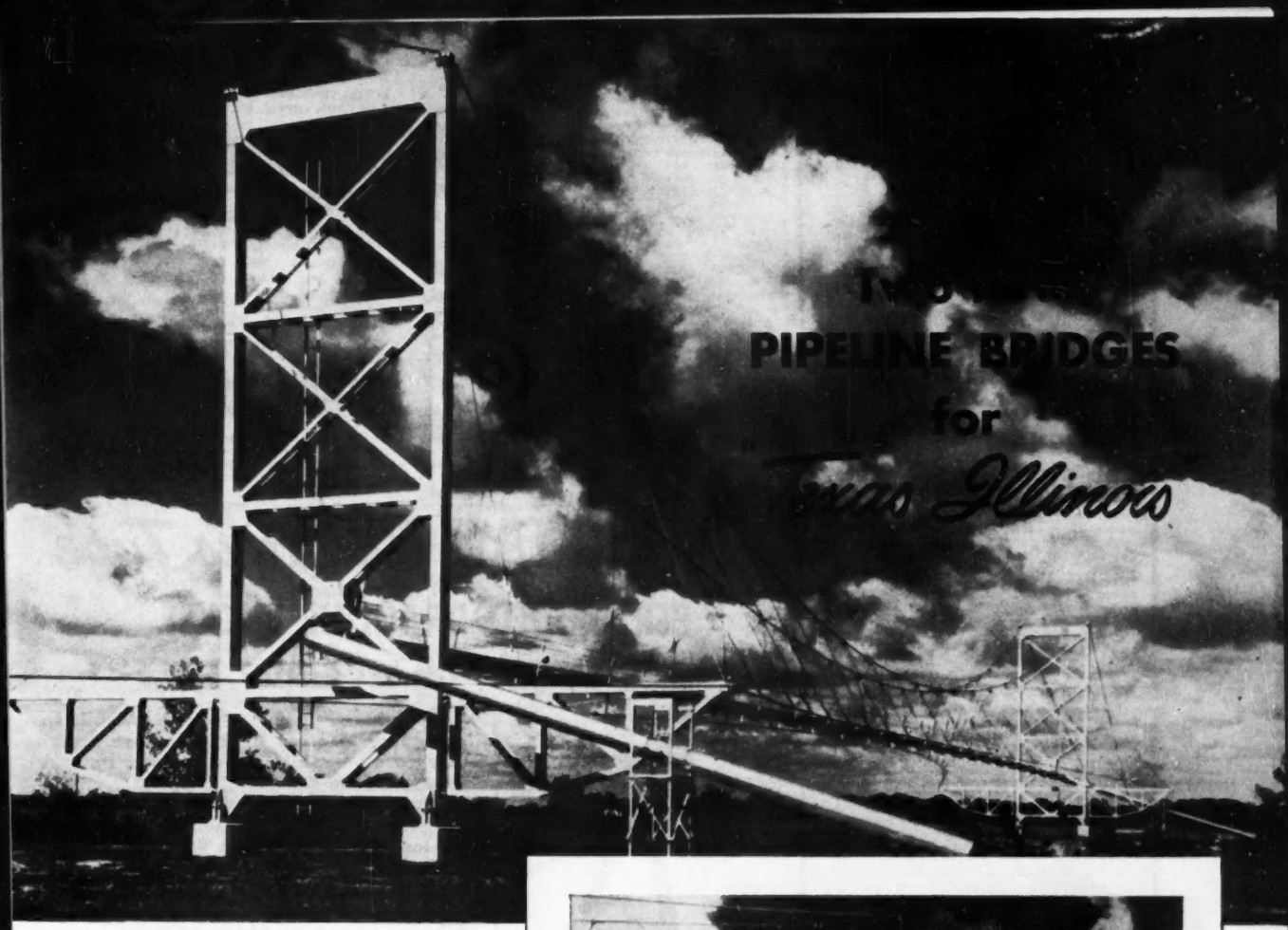
▲ **FLORIDA**—State Road Dept., Tallahassee,
Dade Co.—wid'n State Rd. 5 (U. S. 1) from north of Perrine to South Miami, $614,000;
exten. superhighway along 27 Ave. from Flagler St. south to State Rd. 5, $800,000;
wid'n N. W. 36 St. from W. 18 Ave. to Miami Canal, $250,000;
wid'n State Rd. ALA., from north county line south to where to four-lane width now begins, $600,000;
extension Krome Ave. from Miami Trail southward for 8 mi., $150,000;
wid'n of N. W. Seventh Ave. from N.W. 79 St. to N.W. 36 St. $1,000,000.
wid'n N.E. and N.W. 79 St. from N.E. Second Ave. to N.W. Seventh Ave., $350,000;
extending superhighway along N.W. 27 Ave. from 36 St. Flagler St. in city of Miami, $1,000,000.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Barnstable-Orleans—hy. exten. Rte. 132 Barnstable to Orleans, $2,000,000.
Cummington—imprv. Berkshire Trail, $475,000.
Great Barrington—reconstr. 4 mi. Rte. No. 7, $750,000.
Provincetown—hy. exten Rte. No. 6, $170,000.

MISSISSIPPI—State Hy. Comn., Jackson,
Warren Co.—relocate U.S. Hy. 80 around Vicksburg. $300,000.

▲ **Mo., Kansas City**—City, c/o L. P. Cookingham, city mgr., Dpt. P. Wks., City Hall, wid'n. Prospect Ave. from Truman Rd. (15 St.) to Swope Parkway (47 St.) providing two 30 ft. roadways, 4 ft. medial strip from present 48 ft. width, $1,016,000. CD 8/12/52.

(Continued on page 118)



Colorado River Bridge, near Glenflora, Tex., carrying Texas Illinois 26" O.D. gas pipeline. Main span of 550' has provision for a second line.

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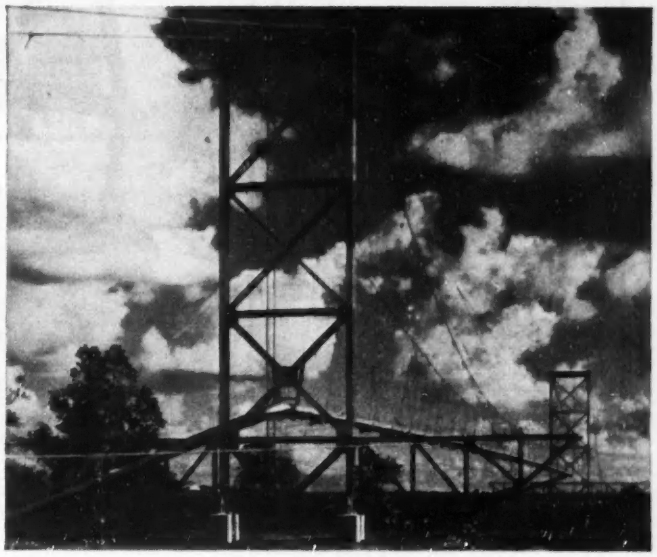

Brazos River Bridge, near Simonton, Tex. 750' main span carries Texas Illinois 30" gas pipeline, and is designed for future additional line.

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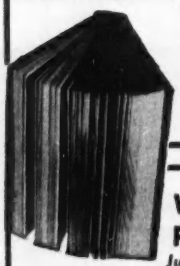

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(Continued from page 116)

▲ **Mo., St. Louis County**—St. Louis County Planning Comn., M. Eugene Baughman, dir., Clayton, Zone 5, 14 mi. cross-country expressway from Lambert-St. Louis Municipal Airport and Affton, incl. overpass at Big Bend Blvd. and underpass at Hanley Rd., overpass at Brentwood Blvd. **$4,000,000.**

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn., Raleigh,
Buncombe Co.—grade and pave Pidgeon River Rd., **$1,950,000;**
Jackson Co.—rebuild U. S. Hy. 23 from Dillsboro to Cowee Mountain Gap. Approx. **$300,000.**

▲ **NORTH CAROLINA**—State Dpt. P. Wks. & Hy. Comn., State Highway Bldg., Raleigh,
Rockingham Co.—West By-pass of city highway. **$1,500,000.**

▲ **SOUTH CAROLINA**—State Hy. Dpt., Columbia,
Anderson and Greenville Counties—dual-lane highway from Anderson to Greenville. **$1,000,000.**

▲ **Ont., Toronto**—City, A. A. Lamport, mayor, City Hall, roads and streets in 1953, **$7,569,606.** CD 1/2/8/47.

EARTHWORK, WATERWAYS

▲ **Fla., Miami**—Dade County Port Authority, Court House, replacing steel bulkheads at docks at N.E. 9 to 12 Sts. **$2,500,000.**

▲ **Tex., Harlingen**—Lower Rio Grande Water Auth., Harlingen, gravity irrigation canal. **$20,000,000.** CD 12/19/51.

AIRPORTS

† **Colo., Denver**—RUNWAYS, etc.—Dpt. Navy, Bldg. 1A Great Lakes Naval Training Station, Great Lakes, Ill. runways and taxiways at Buckley Field, NOY 76103 **$400,000.** Alfred J. Ryan, 1340 Glenarm Pl., consult. engr. and archt. CD 1/31/51.

† **Tex., Kelly Air Force Base**—FIRE STATION, etc.—U. S. Eng., 606 Santa Fe Bldg., Galveston, fire station and records processing bldg., $100,000-$500,000, Maltsberger & Shipman, Associated Architects & Engineers, 2013 Belknap St., San Antonio, consult. engrs.; plans by Associated Architects, 2506 Richton St., Houston, dental clinic, $100,000-$500,000. CD 4/30.

AMERICANS ABROAD

▲ **Japan**—PLANT—Ishihara Chemical Co., Tokyo and Osaka, titanium dioxide plant, between Tokyo and Osaka. Glidden Co., 10999 Madison Ave., Cleveland 2, O., U. S. A. will provide technical assistance, **$6,000,000.**

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PUBLIC BUILDINGS

† **Ala., Fort Mc Clellan**—POST EXCHANGE, etc.—U. S. Eng., P. O. Box 1169, Mobile, Zone 7, plans by Pembleton & Mims, Title Guarantee Bldg., Birmingham, post exchange, chapel and other buildings, $500,000.

▲ **Ark., Little Rock**—HOSPITAL—State Hospital for Nervous Diseases, Markham and Elm Sts., hospital adn. $1,250,000. CD 6/29/50.

▲ **Calif., Alameda**—SCHOOLS—Alameda City Unified School Dist., Administration bldg., Alameda Ave. and Oak St., voted $3,000,000 bonds, for schools. Kump Assocs., 576 Sacramento St., San Francisco, archt. for Uncinal High School; Kenf & Haas, 525 Market St., San Francisco, archt. for West Alameda Elemenary School and addns. to Edison, Otis, Haigh and Mastic Elementary Schools. CD 12/3.

Calif., Palmdale—HOSPITAL—Antelope Valley Hospital Dist., Palmdale, 41-bed hospital, $800,000.

▲ **Calif., San Mateo**—SCHOOL—San Mateo City Elementary School Dist., 120 N. Ellsworth Ave., $2,000,000 bond election Mar. 10 school addn.

▲ **Calif., Santa Rose**—SCHOOL—Santa Rosa High School District, Santa Rosa, $1,500,000 bond election Apr. 14, Junior High School.

Colo., Denver—SCHOOLS—School District No. 1, City and Denver Co., 414 14 St., plans by J. Roger Musick, consult. engr. and archt., Colorado Bldg., 1 story Johnson Grade School addn., W. Jewell Ave. and S. Irving St., $585,844; 1 story, brick, Goldrick Grade School, W. Mississippi Ave. and S. Zuni St., $624,095. CD 10/10.

▲ **Conn., Shelton**—SCHOOL—City School Dept., City Hall, plans by Brown-Von Beren, 295 Sherman Ave., New Haven, 2 story, brick, steel, concrete high school, off Perry Rd., $1,000,000. CD 3/3/52.

▲† **D. C., Wash.**—ADMINISTRATION, etc.—General Services Admin., Public Buildings Service, General Services Bldg., F St. between 18 and 19 Sts. N. W., plans by Justement, Elam & Darby, 2011 K St. N.W., administration bldg., $1,000,000; law school $1,000,000; plans by Robinson & Williams, 1927 11 St. N.W., biology bldg., $1,000,000; pharmacy bldg., $7,200 000; auditorium and fine arts bldg., $2,953,425, Howard University.

▲ **Ga., Atlanta**—City Hall—City, c/o Mayor, City Hall, city hall annex, $1,500,000.

Ill., Evanston—SCHOOL—Community Consolidated School Dist. 65, 1323 Hinman Ave., plans by Perkins and Will, 305 W. Jackson Blvd., Chicago, school, Oakton and Dodge Sts. $940,000. CD 4/29.

Ind., Crawfordsville—SCHOOLS—City School System Crawfordsville, 2 schools. $600,000.

Ind., Franklin—SCHOOL—Johnson County School System, Custer Baker, supt., Franklin, school. $550,000.

▲ **La., Thibodaux**—SCHOOLS—Lafourche Parish School Bd., $2,300,000 bond election Mar. 3, schools. CD 1/10/46.

Mass., Sheffield—SCHOOL—South Berkshire regional School Dist., Russell Doane, chn. Planning Com., Hartsville, John Soames, supt., Sheffield, regional school for Sheffield, New Marlboro, Egremont and Monterey, $800,000. CD 12/15/48.

Mich., Detroit—POLICE PRECINCT—City, Bd. Police Comrs., 1300 Beaubien St., brick, steel police precinct station, McNichols and Grand River Sts. $500,000.

Mich., Lansing—POLICE STATION and JAIL—City, R. W. Crego, mayor, $500,000 bond election Apr. 6, brick, steel, concrete police station-jail. CD 11/19.

▲ **Mich., Marquette**—COLLEGE BLDGS.—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, brick, steel, concrete health and physical education unit, $1,400,000; 2 story, bsmnt., brick, steel elementary training school, $500,000; 2 story, brick, steel, concrete central heating plant addn., $250,000, Northern Michigan College of Education.

▲ **Mich., Marshall**—COURT HOUSE—Bd. Supervs. Calhoun Co., brick, steel, concrete county court house, $1,250,000.

Mich., Redford—SCHOOL—Bd. Educ., Redford Union School Dist. No. 1, plans by Earl G. Meyer, 806 Farwell Bldg., Detroit, 2 story, bsmnt., brick, steel Jnior High School, $500,000.

▲ **Mo., St. Louis**—DWELLINGS—St. Louis Housing Auth., John J. O'Toole, exec. dir., 901 Washington Ave., Zone 1, plans by Hellmuth, Yamasaki & Leinweber, 722 Chestnut St., Zone 1, fourteen 12 story buildings, containing 1,202 dwelling units, area bounded by Chouteau and Lafayette Aves., 13 Blvd. and 14 St. Proj. Mo. 1-7. $16,000,000. CD 1/2/52.

▲ **Mo., St. Louis**—PLANT—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., rehabilitation 3 addnl. units at small arms plant, 4300 Goodfellow Blvd. $13,000,000.

▲† **Neb., Grand Island**—BUILDINGS, UTILITIES—U. S. Eng., 1709 Jackson St., Omaha, rehabilitation of buildings, utilities at Cornhusker Ordnance Plant. $1,476,000.

▲ **N. J., Fort Dix**—ARMY HOSPITAL—U. S. Eng., 121 N. Broad St., Phila., Pa., plans by Ziegler, Childs & Paulsen, consult. engrs. and archts., 921 Bergen Ave., Jersey City, army hospital, $7,500,000.

N. J., Hammonton—REGIONAL HEADQUARTERS—N. J. Div. Purchase & Property, State House Trenton, State Police Regional Headquarters, $500,000.

▲ **N. J., Newark**—HOSPITAL—Parks & Public Property Dept., City Hall, plans by V. H. Paulsen, 921 Bergen Ave., Jersey City, 14 story hospital for 712 beds, Bergen St. $9,000,000. CD 1/17/46.

▲ **N. Y., Babylon**—SCHOOL—Bd. Educ., Babylon, plans by Eggers & Higgins, 100 E. 42 St., New York school, Park Ave. $1,000,000.

▲ **N. Y., Babylon**—TOWN HALL—Town Bd., Town Hall, plans by Knappe & Johnson, 361 E. 149 St., New York, and John H. Langlois, Barbery Court, Amityville, town hall addn. $300,000 or new town hall, $1,000,000.

N. Y., Mt. Vernon—SCHOOL—Bd. Educ., 257 S. Fourth Ave. plans by Warren S. Holmes Co. & Emilio DiRienzo, Midland Ave., Rye, elementary school, 195 N. Columbus Ave. $900,000. CD 10/23/47.

▲ **N. Y., Peekskill**—SCHOOLS—Bd. Educ., Ringgold St., plans by Frederic P. Wiedersum, 85 W. Hawthorne Ave., Valley Stream, 1 story school, Bellusci site, $445,915; school on Lower Ringgold St., Laudati tract, $591,000.

▲ **N. Y., Scotia**—HIGH SCHOOL—Scotia-Glenville Central School Dist., Scotia, plans by Sargent, Webster, Crenshaw & Folley, Watertown Natl. Bank Bldg., Watertown, Central High School. $3,000,000-$4,000,000.

▲ **O., Columbus**—AUDITORIUM—Ohio State University, N. High St., plans by Bellman, Gillette & Richards, 518 Jefferson Ave., Toledo, Zone 4, auditorium, $2,000,000. CD 11/17/44.

▲ **Ore., Portland**—HIGH SCHOOL—Union High School Dist. 3, 303 S.W. Clay St., plans by Annand, Boone & Lei, 1530 S.W. Taylor St., high school for Powellhurst, Gilbert and Russellville Districts. $1,000,000. Erol Reese, c/o owner, engr.

Pa., Newtown—HIGH SCHOOL—Council Rock Junior-Senior High School Municipal Auth., Newtown, plans by Heacock & Platt, 152 N. 15 St., Phila., Junior-Senior High School. $925,000. CD 1/31/51.

▲ **Pa., Norristown**—OFFICE Comrs. Montgomery Co., Norristown, plans by Trautwein & Howard, 1411 Walnut St., Phila., office. $1,600,000.

▲ **Tenn., Dyersburg**—HOSPITAL—Dyer Co., Dyersburg, plans by Howard, Hickerson & Jordan, Inc., 304½ Third Natl. Bank Bldg., Nashville, hospital, $2,000,000. CD 5/20.

Tex., Denver City—HIGH SCHOOL—Denver City Independent School Dist., Denver City, plans by Butler-Brasher Co., 412 Avenue M, Lubbock, brick on hollow tile Junior High School, rein.-con. fdn., $660,000.

▲ **Va., Fairfax**—SCHOOLS—Fairfax County School Bd., Fairfax, County will hold referendum on $11,000,000 school construction program February 3. CD 6/6/50.

▲ **Wis., Wauwatosa**—SCHOOL—Bd. Educ., 1732 Wauwatosa Ave., Milwaukee, Zone 13, plans by Ebling Plunkett & Keymar, 1220 N. Milwaukee St., Milwaukee, Zone 2, Longfellow Junior High School., $2,500,000.

▲ **Man., Selkirk**—HOSPITAL—Selkirk General Hospital Bd., Selkirk, plans by Moody & Moore, 285 Broadway, Ave., Winnipeg, 69-bed hospital addn. and nurses residence at hospital. $1,000,000.

COMMERCIAL BUILDINGS

▲ **Fla., DeLand**—COLLEGE GROUP—Stetson University, DeLand, college group of buildings. $2,500,000. CD 10/25/46.

Ga., Macon—CHURCH—Tabernacle Baptist Church, c/o Henry J. Behr, Bankers Insurance Bldg., church. $500,000.

Ind., Columbus—BANK—Irwin Union Trust Co., Columbus, bank, $800,000. Eero Sarrinenn & Assoc., Bloomfield Hills, Mich., engrs.

Md., Chesapeake Beach—HOUSING—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., construct, manage and finance 66 housing units, Randle Cliff, $528,000.

▲ **Mo., Kansas City**—HOSPITAL—Research Hospital, c/o Gustav Nottberg, pres. Hospital Bd. Comn., 23 Rd. and Holmes St., plans by Alonzo Gentry, 4 W. 13 St., hospital on 20 acre tract at Meyer Blvd. and Prospect Ave. $5,000,000-$10,000,000. CD 3/17.

Mo., Wellston (St. Louis 14 P. O.)—BANK—State Bank of Wellston, Phillip C. Kopitsky, chn., 6209 Easton Ave. Zone 14, 1 story, bsmnt., bank incl. roof-parking on site 98x167 ft. on Easton Ave. in 6300 block, $500,000.

▲ **Neb., Elkhorn**—SEMINARY—Benedictine Fathers, Inc., Elkhorn, prep-theological seminary, $1,000,000.

O., Dayton—MERCANTILE—Inland Mfg. Co., 2701-45 Inland Ave., add. mercantile. $500,000.

▲ **N. H., Concord**—HOSPITAL—Concord Hospital, James Landry, pres., Concord, plans by Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, Mass., 4 story, bsmnt., brick, steel hospital alterations, addns., Pleasant St. $3,000,000. The Office of Hollis French, 210 South St., Boston, Mass., consult. engrs. CD 3/2/45.

▲ **N. Y., Bayside**—HOUSES—Bay Terrace Corp., c/o William Dowling, archt., 350 Fifth Ave., New York, Zone 1, 300 one-family houses, 212 St. and Bell Blvd. $4,704,000.

N. Y., Flushing—APARTMENT—A. Roberts, c/o Julius Fishkind, archt., 161-19 Jamaica Ave., Jamaica, 6 story apartment, 149 St. and Roosevelt Ave. $840,000.

▲ **N. Y., Rye**—OFFICE—Standard-Vacuum Oil Co., 26 Broadway, New York Zone 4, plans by Eggers & Higgins, 100 E. 42 St., New York, Zone 17, 2 and 3 story office, on 26-acre tract, north side of Anderson Hill Rd., near King St. $1,000,000. CD 11/26.

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▲ **O., Columbus**—STORE, etc.—Sears Roebuck & Co., W. Arthington and S. Homan St., Chicago, Ill., plans by Leonard E. Dunlop, 333 N. Michigan St., Chicago 1, Ill., department store-warehouse, parking area. $12,000,000. J. J. Redden, c/o owner, engr. CD 1/15/53.

▲ **Okla., Tulsa**—OFFICE—National Bank of Tulsa, 320 S. Boston St., 14 story office addn. $3,000,000. CD 9/22.

▲ **Pa., Allentown**—SHOPPING CENTER—Morris A. Kravitz, 225 S. 15 St., Phila., plans by T. Demchick & David Supowitz, 15 and Locust Sts., Phila., shopping center, N. 7 St. $1,000,000. CD 8/15.

Pa., Norristown—COMMUNITY CENTER—George Washington Carver Community Center, c/o Frederick B. Smillie, Pres., 266 E. Main St., community center. $500,000.

Pa., Phila.—HOSPITAL—Shriners Hospital for Crippled Children, Roosevelt Blvd. and Pennypacker Circle, plans by The Ballinger Co., 121 N. Broad St., hospital addn. $500,000.

▲ **Pa., Phila.**—APARTMENT—2101 Walnut Co-operative, Inc., 1426 Walnut St., plans by George Idel, 117 S. 17 St., apartment, 21 and Walnut Sts. $3,000,000.

Pa., Swarthmore—APARTMENT—Arthur W. Binns, Inc., 2221 Chestnut St., plans by Morris Rosenthal, Commercial Trust Bldg., Phila., apartment, Dartmouth Ave. $600,000.

Tex., Corpus Christi—NURSES HOME—Spohn Hospital, c/o Mother Mary Vincent, admin., 1436 Third St., plans by Wade, Gibson & Martin, 419 Med. Prof. Bldg., 4 story, 30,000 sq. ft., steel, masonry nurses home. $600,000. T. A. Vernor, Taft, and Martin Staley, 31 Chandler Bldg., San Antonio, consult. engrs. CD 12/18.

Tex., Dallas—MEDICAL PROF. BLDG.—Clesi Medical Protection Bldg., c/o Brazel Clesi, 4125 Oaklawn St., 6 story bsmnt., 150x405 ft. masonry Medical Prof. Bldg., 7403 Inwood Rd. $850,000.

▲ **Tex., Houston**—SHOPPING CENTER—Theodore W. Berenson, 50 Federal St., Boston, Mass., Unit 1, shopping center, approx. 50 store spaces, 40-acres, $10,000,000; Unit 2, shopping center, $5,000,000, on 60-acre tract at Gulf Freeway-LaPorte Expressway traffic interchange.

▲ **Tex., Houston**—SHOPPING CENTER—Highland Village Shopping Center, Westheimer Rd., 150,000 sq. ft. masonry Highland Village Shopping Center addn. $1,000,000.

▲ **Tex., Houston**—OFFICE—Petroleum Building Co., 1314 Texas St., plans by Kenneth Franzheim, 2402 Crawford St. doubling existing size of 21 story office. $3,000,000.

▲ **Tex., Pasadena**—SHOPPING CENTER—Leo F. Corrigan, Mercantile Bank Bldg., Dallas, 1 story, masonry "Corrigan Shopping Center" addn. $1,250,000.

Wyatt C. Hedrick, 5201 Fannin St., Houston, consult. engrs.-archts. CD 1/25/51.

INDUSTRIAL BUILDINGS

▲ **Fla., Bartow**—PLANT—Davison Chemical Corp., Bartow, plant addn. $12,000,000.

▲ **Fla., Bartow**—PLANT—International Minerals & Chemical Corp., Bartow, plant addn. $8,000,000. CD 5/31/46.

▲ **Fla., Bartow**—PLANT—F. S. Royster Guano Co., Bartow, Fla., plant addn. $3,500,000.

▲ **Fla., Bartow**—PLANT—Virginia-Carolina Chemical Corp., Bartow, Fla., plant addn. $7,000,000.

▲ **Ind., Lawrenceburg**—GENERATOR—Indiana and Michigan Electric Co., C. V. Sorensen, genl. mgr., 2101 Spy Run Ave., Fort Wayne, 200,000 watt generator addn. to present plant equipment. $14,000,000. CD 4/21/48.

Mo., Kansas City—PLANT—Percy Kent Bag Co., Richard K. Peck, pres., Armour and Iron Sts., North Kansas City, Mo., plans by Kivett & Myers, 1016 Baltimore St., Kansas City, Mo., 1 story, 75,000 sq. ft. plant on 4-acre site, Winner Rd. and Topping Ave. $800,000.

▲ **Neb., Omaha**—PLANT—Continental Can Co., 100 E. 42 St., New York, N. Y., plans by The Bechtel Corp., 3780 Wilshire Blvd., Los Angeles, Calif., mfg. plant. $2,500,000. Job 9/24.

Pa., Phila.—FACT Jefferson St., fa

▲ **Pa., Willow Gr** Western Savings bldgs. $5,000,0

▲ **Tenn., Nashvill** 195 Broadway, N plant. $1,000,00

▲ **Tex., Daingerfi** Daingerfield, plan

▲ **Tex., George W** Inc., George We natural gasoline

Tex., Houston—S Building Co., 3 Franzheim, 240 auto garage. $4

▲ **Tex., Snyder**—A Texas Bldg., Ho for propane, $2 warehousing and $600,000.

▲ **Wash., Tacoma** fining Co., c/o Co., St. Paul $5,000,000.

▲ **Ont., Sault Ste. Marie**—COLD STRIP MILL—Algoma Steel Corp., Sault Ste. Marie, 60,000 sq. ft. cold strip mill. $3,500,000.

▲ **Ont., Toronto**—FACTORY—Colgate-Palmolive-Peet Co. Ltd., 84 Colgate Ave., plans by A. G. Facey, 991 Bay St., 5 story factory addn. $1,000,000.

UNCLASSIFIED

Ark., Little Rock—TELEVISION STATION—Wrather, Hill & Alvarez, 1431 Donaghey Bldg., television station, $885,700. Kear & Kennedy, 1302 18 St. N.W., Wash., D. C., consult engrs.

Calif., Berkeley—TELEVISION STATION—Pacifica Foundation (KPFA), 2207 Shattuck Ave., Zone 4, television station, $535,000. Edward Neece, c/o owner, consult. engr.

Conn., Middletown—LIGHTING SYSTEM—State P. Wks. Comrs., State Office Bldg., Hartford, plans by Fletcher Thompson, Inc., 211 State St., Bridgeport, lighting system at Connecticut State Hospital, $425,000. CD 10/22.

▲ **Fla., Miami**—TELEVISION STATION—Miami Broadcasting Co., DuPont Bldg., 169 E. Flagler St., will not construct television station. $1,246,690. Project abandoned. CD 8/1/52.

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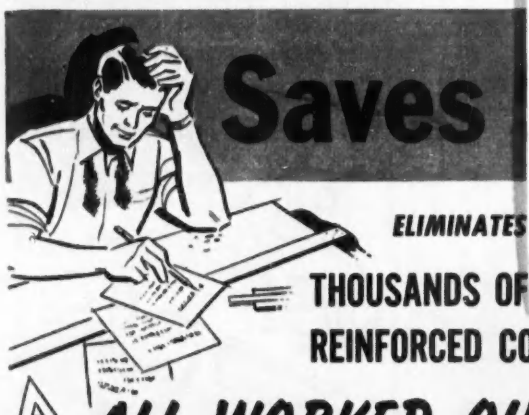

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NAME_____

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CITY_____ STATE_____

January awards set record

Private mass housing at all-time high; industrial building rises to $531 million; commercial contracts steady

Heavy construction started 1953 with a bang. Contract awards, as reported by ENGINEERING NEWS-RECORD, set a new record for the month of January with a dollar volume just under $1.9 billion.

Industrial building and private mass

Public building other than housing was 55% ahead of the like month in 1952, with awards of $213 million. Public housing was 23% ahead on the same basis with its total of $91 million in awards.

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Other large increases came in the Far West, where public buildings, other than housing, and earthwork and waterways contracts accounted for a 138% gain over January, 1952. In the Middle Atlantic States, commercial building, highways and public buildings accounted for most of the 66% gain.

New England's contract volume was up 33% over January, 1952.

That was due mainly to increased volume in contracts for public construction, including building, housing and unclassified construction. The states west of the Mississippi (and east of the Rockies) showed a 2% increase.

A 25% decline in contract volume in the South last month was traced to smaller volume for commercial building and earthwork and waterways.

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f the following minimum costs—Waterworks, excavation, ldings, $82,000; other buildings, $300,000

(000 Omitted)

	January, 1953						Total U. S. January		% Change	Canada January
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	1953	1952	'52 to '53	1953
Public Works										
Waterworks	130	1,728	7,115	479	4,730	5,349	**19,531**	26,538	− 26	1,150
Sewerage	418	8,882	27,470	5,173	6,279	1,063	**49,285**	16,954	+191	1,472
Bridges	652	6,962	15,237	15,527	11,376	4,594	**54,348**	18,319	+197	575
Earthwork and waterways	1,344	1,487	5,826	1,007	13,408	30,339	**53,411**	46,873	+ 14	422
Streets and roads	2,154	56,436	15,353	10,985	22,771	8,669	**116,368**	107,332	+ 8	10,415
Public buildings, residential	10,121	17,121	31,986	19,088	3,119	9,246	**90,681**	73,802	+ 23	300
Other public buildings	11,246	53,051	19,067	21,405	22,831	85,143	**212,743**	137,483	+ 55	10,450
Unclassified	6,594	24,237	19,160	8,230	25,630	28,774	**112,625**	46,358	+143	7,845
Total public	**32,659**	**169,904**	**141,214**	**81,894**	**110,144**	**173,177**	**708,992**	**473,659**	**+ 59**	**32,629**
Federal government (included in above classifications)	4,465	38,169	29,827	10,081	43,178	103,210	**228,930**	154,928	+ 48	16,815
Private										
Bridges	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Industrial buildings	3,588	7,967	41,388	313,650	143,942	20,740	**531,275**	337,417	+ 57	17,608
Commercial buildings, residential	7,294	122,649	46,530	288,485	36,210	9,698	**510,866**	262,440	+ 95	23,359
Other commercial buildings	1,000	10,597	28,095	29,033	13,014	1,380	**83,119**	32,241	+158	24,200
Unclassified	.....	.....	9,609	23,915	18,537	207	**52,268**	91,041	− 43	6,380
Total private	**11,882**	**141,213**	**125,622**	**655,083**	**211,703**	**32,025**	**1,177,528**	**723,139**	**+ 63**	**71,547**
Total Engineering Construction:										
January, 1953—5 weeks	**44,541**	**311,117**	**266,836**	**736,977**	**321,847**	**205,202**	**1,886,520**	.....	**+ 58**	**104,176**
December, 1952—4 weeks	36,602	199,598	195,671	183,186	185,992	105,927	**906,976**	.....	.....	**55,212**
January, 1952—5 weeks	33,440	187,855	355,399	217,856	316,154	86,094	.....	1,196,798	.....	**158,763**
% Change '52 to '53	+33	+66	−25	+238	+2	+138	.....	.....	.....	**−34**

▲ **O., Columbus**—STORE, etc.—Sears Roebuck & Co., W. Arthington and S. Homan St., Chicago, Ill., plans by Leonard E. Dunlop, 333 N. Michigan St., Chicago 1, Ill., department store-warehouse, parking area. $12,000,000. J. J. Redden, c/o owner, engr. CD 1/15/53.

▲ **Okla., Tulsa**—OFFICE—National Bank of Tulsa, 320 S. Boston St., 14 story office addn. $3,000,000. CD 9/22.

▲ **Pa., Allentown**—SHOPPING CENTER—Morris A. Kravitz, 225 S. 15 St., Phila., plans by T. Demchick & David Supowitz, 15 and Locust Sts., Phila., shopping center, N. 7 St. $1,000,000. CD 8/15.

Pa., Norristown—COMMUNITY CENTER—George Washington Carver Community Center, c/o Frederick B. Smillie, Pres., 266 E. Main St., community center. $500,000.

Pa., Phila.—HOSPITAL—Shriners Hospital for Crippled Children, Roosevelt Blvd. and Pennypacker Circle, plans by The Ballinger Co., 121 N. Broad St., hospital addn. $500,000.

▲ **Pa., Phila.**—APARTMENT—2101 Walnut Co-operative, Inc., 1426 Walnut St., plans by George Idel, 117 S. 17 St., apartment, 21 and Walnut Sts. $3,000,000.

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▲ **Fla., Bartow**—PLANT—International Minerals & Chemical Corp., Bartow, plant addn. $8,000,000. CD 5/31/46.

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▲ **Neb., Omaha**—PLANT—Continental Can Co., 100 E. 42 St., New York, N. Y., plans by The Bechtel Corp., 3780 Wilshire Blvd., Los Angeles, Calif., mfg. plant. $2,500,000. John Fedosky, c/o owner, ch. engr. CD 9/24.

Pa., Phila.—FACTORY—S. Osterneck Co., 179 W. Jefferson St., factory bldgs. $500,000.

▲ **Pa., Willow Grove**—INDUSTRIAL—Philip S. Seltzer, Western Savings Fund Bldg., Phila., 10 industrial bldgs. $5,000,000.

▲ **Tenn., Nashville**—PLANT—Western Electric Co., Inc., 195 Broadway, New York, N. Y., telephone equip. mfg. plant. $1,000,000.

▲ **Tex., Daingerfield**—PLANT—Lone Star Steel Co., Daingerfield, plant addn. $5,000,000.

▲ **Tex., George West**—PLANT—H. W. Bass & Sons, Inc., George West, const. units for mfg. products of natural gasoline. $2,950,858.

Tex., Houston—STORAGE and GARAGE—Petroleum Building Co., 1314 Texas St., plans by Kenneth Franzheim, 2402 Crawford St., storage and parking auto garage. $650,000.

▲ **Tex., Snyder**—WAREHOUSING, etc.—The Texas Co., Texas Bldg., Houston, warehousing and steel storage for propane, $260,000; storage for butane, $200,000; warehousing and steel storage for gasoline and products, $600,000.

▲ **Wash., Tacoma**—OIL REFINERY—Pacific Oil & Refining Co., c/o J. E. Erickson, Northwestern Refining Co., St. Paul Park, St. Paul, Minn., oil refinery. $5,000,000.

▲ **Ont., Sault Ste. Marie**—COLD STRIP MILL—Algoma Steel Corp., Sault Ste. Marie, 60,000 sq. ft. cold strip mill. $3,500,000.

▲ **Ont., Toronto**—FACTORY—Colgate-Palmolive-Peet Co. Ltd., 64 Colgate Ave., plans by A. G. Facey, 991 Bay St., 5 story factory addn. $1,000,000.

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▲ **Fla., Miami**—TELEVISION STATION—Miami Broadcasting Co., DuPont Bldg., 169 E. Flagler St., will not construct television station. $1,246,690. Project abandoned. CD 8/1/52.

Georgia—RURAL DISTRIBUTION LINES—Grady County Electric Membership Corp., Cairo, 122 mi. rural distr. line and sys. imprvs., Grady Co. $440,000.

Ill., Chicago—SWIMMING POOL, etc.—Edgewater Beach Hotel, 5555 Sheridan Rd., plans by Lewis B. Walton, 626 Grove St., Evanston, swimming pool and garage below. $725,000.

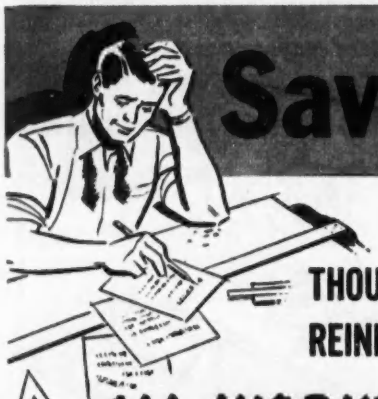
Ill., Peoria—TELEVISION STATION—West Central Broadcasting, c/o D. A. McGee, 306 N. Robinson St., Oklahoma City, Okla., will not construct television station. $518,580. Project abandoned. CD 7/23.

▲ **N. Y., Idlewild**—HANGAR, etc.—Port of New York Auth., 111 8th Ave., New York, Zone 11, Hangar No. 7 to be used by Lockheed Aircraft International, $2,700,000; CAA operations facility bldg., $1,600,000; United States Mail Bldg., $380,000 all foregoing at New York International Airport. CD 4/27/44.

Texas—TELEPHONE LINES—Five Area Telephone Cooperative, Earth, and c/o W. R. Damon, Circleback, rural pole telephone lines, Lamb Co. $703,000.

Tex., Beaumont—TELEVISION STATION—Lufkin Amusement Co., Kilty St., wil not construct television station. $557,200. Project abandoned. CD 8/29.

Wis., Madison—TELEVISION STATION—Television of Wisconsin, Inc., 122 W. Washington Ave., will not construct television station. $480,240. Project abandoned. CD 9/8.



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January awards set record

Private mass housing at all-time high; industrial building rises to $531 million; commercial contracts steady

Heavy construction started 1953 with a bang. Contract awards, as reported by ENGINEERING NEWS-RECORD, set a new record for the month of January with a dollar volume just under $1.9 billion.

Industrial building and private mass housing were the rocket launchers. Contracts for industrial building soared to $531 million, the second highest month on the books. Activity in this category was at its liveliest point since the first quarter of 1951, when contracts for defense industrial expansion hit a peak.

Private mass housing contracts set an all-time high in January with $511 million in awards.

Commercial building was off to a good start in the new year with $83 million in January contracts. That, however, was not up to the pace of the fourth quarter of last year when commercial construction first rebounded from the previous restrictions of controls and the steel strike.

• **Others still strong**—All other types of construction, with the exception of waterworks and private unclassified—mainly pipelines and transmission lines—also ran ahead of January, 1952.

Public building other than housing was 55% ahead of the like month in 1952, with awards of $213 million. Public housing was 23% ahead on the same basis with its total of $91 million in awards.

Sewerage contracts set an all-time high in dollar volume as January awards jumped to $49 million, 191% more than a year ago.

Waterworks, with $20 million in contracts, lagged 26% behind January, 1952. But January, 1952, was the big month for waterworks contracts last year so that awards are still close to the record level for the year.

Awards for highways and bridges are pointing toward new records in '53, if the January pace is any indication of what may be expected for the remaining months of the year.

Highway contracts in January hit $116 million, 8% more than January, 1952. Bridge construction was off to a flying start with $51 million in new contracts—197% ahead of the like month last year.

Earthwork and waterways awards totaled $53 million, 14% more than in January, 1952.

Public unclassified construction set a spectacular pace last month with $113 million in new contracts—up 143% over January, 1952. Federal airport construction, which was the biggest item in the public unclassified category, picked up.

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A 25% decline in contract volume in the South last month was traced to smaller volume for commercial building and earthwork and waterways.

ENGINEERING CONSTRUCTION CONTRACTS—JANUARY, 1953

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $34,000; *other public works,* $60,000; *industrial buildings,* $82,000; *other buildings,* $300,000

Five Weeks—Thousands of Dollars (000 Omitted)

	January, 1953						Total U. S. January		% Change	Canada January
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	1953	1952	'52 to '53	1953
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Total Engineering Construction:										
January, 1953—5 weeks	**44,541**	**311,117**	**266,836**	**736,977**	**321,847**	**205,202**	**1,886,520**	.....	**+ 58**	**104,176**
December, 1952—4 weeks	36,602	199,598	195,671	183,186	185,992	105,927	**906,976**	.....	.....	**55,212**
January, 1952—5 weeks	33,440	187,855	355,399	217,856	316,154	86,094	.....	1,196,798	.....	**158,763**
% Change '52 to '53	+33	+66	−25	+238	+2	+138	.....	.....	.....	**−34**

Wheland to make aluminum

Enters field as fourth producer since Korea; rolling mill will be built on West Coast for aluminum shapes

Chattanooga's Wheland Co. is about to become the nation's fourth new primary aluminum producer since Korea. (The others: Anaconda Copper, Olin Industries, and Harvey Machine Co.)

Wheland's decision to produce ingot brings the government's current aluminum expansion program to an end. If plans go through, domestic capacity of 1.7 million tons annually will be reached in 1955—more than double pre-Korea capacity. Wheland's output will more than take up the 36,000-ton proposed expansion that had been in abeyance since DPA certified Harvey for rapid tax amortization on a 54,000-ton aluminum plant at The Dalles, Ore., last December.

Defense Production Administration is expected to issue fast tax writeoff authority to Wheland this week for construction of a 50,000-ton plant in the Chattanooga area. The plant will be privately financed, with costs roughly estimated at about $70 million.

Along with the fast amortization, the company will get a government-guaranteed market for its aluminum output.

Wheland is a long-established manufacturer of sawmill machinery and oil-field drilling equipment, and a grey-iron casting producer. The company claims to have power commitments from TVA for the proposed aluminum plant.

Wheland's share of domestic aluminum capacity will be 2.1%. Here's how the rest of the industry will shape up when all proposed plants are in production: Alcoa, 38.1%; Reynolds, 24.4%; Kaiser, 23.3%; Olin, 6.2%, Harvey, 3.1%, and Anaconda, 2.8%.

• **New round seen**—There's now talk in Washington about another round of aluminum expansion that would boost domestic capacity beyond the present goal. Alcoa plans for a 200,000-ton plant at Akagway, Alaska, temporarily snagged because of Canada's refusal to allow diversion of Yukon water into Alaska presumably would come under this.

The big problem in aluminum is to locate near electric power at low cost. At least one management engineering firm is now making a survey to line up such sites in anticipation of more government-stimulated expansion.

Olin Industries, Inc., which received DPA's okay for a 110,00-ton aluminum plant, decided on a site in West Virginia's Morgantown area, where power could be produced from low-grade bituminous coal. At the company's request, however, the government recently pushed the deadline for Olin's decision on a plant site up a month from Jan. 15.

There's also talk in Washington that aluminum allocations may have to be kept past June 30, when the present law expires. There have been heavy production losses because of drought-created power shortages in the Pacific Northwest and the Tennessee Valley.

The drought has subsided, and the rains now are sufficient to assure full-capacity aluminum output again in March. But weather experts worry about the possibility of another drought this summer—and with it, another curtailment of power. The reason is that while the rains have been adequate, there has been relatively little snow in the Pacific Northwest, which is the potential source of water for power after the spring thaw.

Another factor in the retention of aluminum controls would be the resumption of large-scale government stockpiling. Many defense mobilization officials advocate this now, since there has been no aluminum stockpiling since Korea.

• **Rolling mill**—Plans for the construction of the first rolling mill on the Pacific Coast for the production of aluminum sheets, strips and circular shapes were announced Jan. 27 by Harvey Machine Co., Inc., of Torrance, Calif.

Erection of a new plant which will cost some $20 million will begin as soon as a site is selected, said Leo M. Harvey, president of the firm. It is believed the site will be adjacent to Harvey's present Torrance plant.

The new mill is an integral part of the expansion goal set by DPA to increase facilities for the production and heat treating of aluminum sheets and strips as a part of the nation's defense program.

The entire project will be built by private financing, Harvey said.

The new facilities will include special heat-treating equipment for the production of high-strength aluminum needed by the aircraft industry.

Contractors get tax relief

Of an estimated 15,846 employers in California's construction industry, 1,500 will pay no unemployment insurance taxes this year and 3,500 others will pay less than last year's minimum tax rate of 1% of payrolls.

The tax relief came because of a law providing that reduced tax rates will apply when the state unemployment fund equals or exceeds 7½% of taxable wages. California's fund at the end of 1952 stood at $648.3 million, exceeding the required limit by $8.2 million.

According to the state tax law, when the fund equals or exceeds 7½% of taxable wages, unemployment insurance taxes range from zero to 2.7%. When the fund falls below the required amount, employers pay taxes of from 1 to 2.7% of their payrolls.

$12-million Philippine bid goes to Atkinson Company

In a surprise announcement, the National Power Corporation of the Philippines disclosed that a contract for construction of the Ambuklao power and irrigation dam has been awarded the Guy F. Atkinson & Co. for $22.1 million.

A month earlier, NPC announced that Morrison-Knudsen Co. submitted the lower of only two bids, offering to do the job for $20.8 million.

A spokesman for NPC revealed that Morrison-Knudsen's bid did not comply with the terms of the tender. The company refused to submit to NPC conditions by reserving for itself complete and absolute authority in regard to work supervision and control, staff salaries and other matters. It refused to assume any financial responsibility for proper execution of the work or to invest any of its own funds in the undertaking.

Instead, it requested NPC to set up a revolving fund of $1 million to be replenished by monthly progress payments, and to defer auditing of funds until contract completion.

Though Morrison-Knudsen offered to build the dam and spillways for a contractor's target fee of only 7%—compared with Atkinson's 10%—the firm specified a minimum fee of 4% compared with Atkinson's 3%.

In addition, Morrison-Knudsen did not provide for employee housing, dismantling of temporary structures, contractor's tax, insurance and other sums while requiring the contracting authority to contribute to the operational expenses of the home office.

AEC plans $29-million plant in Illinois, construction scheduled to start this spring

The Atomic Energy Commission, which in 1952, was the nation's largest single buyer of construction, went back into the market last week. But the commission's first project for '53 turned out to be a modest one—at least by AEC standards.

The commission announced that it will build a new $29-million plant for processing and assembling explosives on a 9,300-acre site 18 mi east of Macomb, Ill., on the Spoon River.

During World War II, the property was the site of Camp Ellis. In recent months, most of the land has been used by the Air Force as a "survivor training area." About 800 acres were held by the Army for use by the Illinois National Guard. Through the General Services Administration, which acts, among other things, as the government's real estate broker, the services agreed to give AEC the land.

Fluor Corp. Ltd., of Los Angeles, Calif., was selected as the architect-engineer. No prime contractor has been selected. W. A. Curtis of the AEC Santa Fe operations office will be project engineer for the commission.

• **Early start**—The construction work, cost of which will be on a lump sum, competitively bid basis, will start this spring. The project is scheduled for completion in mid-1954. But the peak period for construction workers will come late this year when an estimated 2,000 building tradesmen will be on the job.

CROSS MARKS SITE of new AEC plant 18 mi east of Macomb, Ill.

No provisions are being made for defense housing in the area because local housing facilities are considered adequate to absorb the influx of personnel.

W. A. CURTIS, of Santa Fe office, will be AEC project engineer for plant.

Legislators study school aid proposals

Two proposals to aid in the construction of public schools are under consideration by the Washington state legislature, which recently received a $30-million request from the State Department of Public Instruction for building during the next biennium. (ENR Jan. 22, p. 79)

One proposal would seek to persuade counties to boost the assessed valuation of property to more realistic levels, thus making more funds available to school districts. Although state law provides that property be assessed at 50% of its "fair and true value," the present average is only 17%. Pending legislation provides that, for every point the assessments drop below 30% of market value, the county would be denied 4% of its portion of liquor profits.

A more spectacular proposal, but one which has failed to obtain approval from legislative leaders, calls for a $170-million bond issue to build schools and public institutions over the next eight years. It comes from Senator Tom Hall, a top senate figure, but has been given the "go-slow" sign by R. Mort Frayn of Seattle, speaker of the house, and other legislative leaders.

Hall's bond program, based on a study made by the Legislative Budget Interim Committee, is the most ambitious single program of its type ever suggested in the legislature.

Cleveland rejects sole bid for rapid transit construction

Only one bid was received for the largest construction contract ever offered by the Cleveland Transit System. The work involved construction of the East Side rapid transit line.

The bid was rejected as too high. CTS now has decided to combine two construction projects in order to attract more bidders.

Horvitz Co. was the sole bidder on the estimated $1.7-million project. The bid was just under $2 million. CTS will combine two contracts expected to total $3.5 million. That puts completion of the Cleveland Transit System line up to May, 1954—nearly two and one-half years behind the original schedule.

Construction costs steady

Construction costs remained stable in February, for the third consecutive month showing little change. Engineering News-Record's building cost index and construction cost index are slightly lower than in November, 1952. That is due principally to declines in lumber prices in some cities.

ENR's construction cost index for February is 487.19 (1913 equals 100). That is down only .01 point from the January figure, but it is 1.4 points lower than the November, 1952 high.

ENR's building cost index is at 425.24 (1913 equals 100). The February figure is 0.2 point lower than in January and 0.8 point under the November, 1952, high. While the lumber price average dipped, there were wage hikes for bricklayers in San Francisco and for structural ironworkers in Los Angeles.

In each of the last three months, ENR's average of fir lumber prices in 20 cities has been easing lower. But the average for pine shows a slight increase over the same period, partially offsetting the decline in fir prices.

The first increase in cement prices in 1953 was reported in Atlanta where the price went up 6 cents per bbl, f.o.b. city, bulk. But that single increase did not have much effect on the national indexes.

$200-million Cincinnati home project to be built

Warner-Kanter Construction Corp., of Cincinnati, Ohio, will build the $200-million North Greenhills project of the Cincinnati Community Development Co., it was announced last week.

The local firm entered the picture after plans of an out-of-town combine headed by Robert Gerholz, of Flint, Mich., and Richard Seltzer, of Philadelphia, failed to materialize (ENR Oct. 23, 1952, p. 39 and Nov. 6, 1952, p. 54).

The Greenhills community will include about 10,000 dwelling units plus regional and sectional shopping centers, schools and churches, an industrial section and other necessary facilities.

Warner-Kanter, which has built major developments in the South and Midwest, is an integrated company with its own architectural and engineering staff.

The proposed North Greenhills development—to be built by private enterprise—offered some interesting contrasts to the original Greenhills development, one of the federally built "Greenbelt" towns which was developed during the 1930's (ENR Feb. 3, 1938, p. 166).

The federal project was small by comparison. For example, the original Greenhills had 676 dwelling units, built at a cost of $5.5 million and was actually a part of an over-all $11.4-million project that included schools, churches and shopping centers.

Dallas voters approve Love Field bond issue

Dallas voters on January 27 approved the $12.5-million bond program for the expansion of Love Field. The vote was 19,481 to 15,194, the largest vote on a municipal issue ever scored in Dallas. It topped even the turnout of 32,076 voters for the $50-million capital improvements bond-issue election of last May.

Dallas aviation director George Coker said the program would be stretched out over six years.

First step in the development will be the purchase of 230 acres of land expected to cost about $5.5 million.

Following will be relocation of Lemmon Ave., placement of shops and hangars, enlargement and lengthening of runways, erection of new buildings for airport operators, and demolition of the present terminal and erection of a new one.

Principal opposition to the bond issue came from persons living near Love Field, who argued expansion would endanger their homes, and the present plans would be obsolete with the coming of the jet air age. Meanwhile, construction of Love Field's rival, Fort Worth International (Midway) Airport is going ahead according to plan, with opening expected in May.

While, on the one hand, aviation authorities lauded the outcome of the election, American Airlines significantly announced it would divide some of its traffic between Love Field and Midway.

NPA approves start on water, sewage projects

More than 460 water and sewage construction projects, with a total value of $125 million, received allocations for steel, copper and aluminum from the National Production Authority to start construction in the fourth quarter of 1952.

Of the 463 construction jobs authorized, 303 were for waterworks and 160 for sewerage.

Water projects receiving allocations are valued at $42.5 million and sewage construction is rated at $82.5 million.

The amounts include estimated cost of materials, labor and engineering, James C. Crenshaw, director of NPA's Water Resources Division, has explained.

Controlled materials allotted by the Water Resources Division in the fourth quarter totaled 123,635 tons of steel; 2,177,279 lb of copper; and 119,818 lb of aluminum.

New Jersey headed the fourth-quarter construction approvals with the largest dollar volume, $17 million, while California had the largest number of projects, 65.

Defense housing shows progress, HHFA says

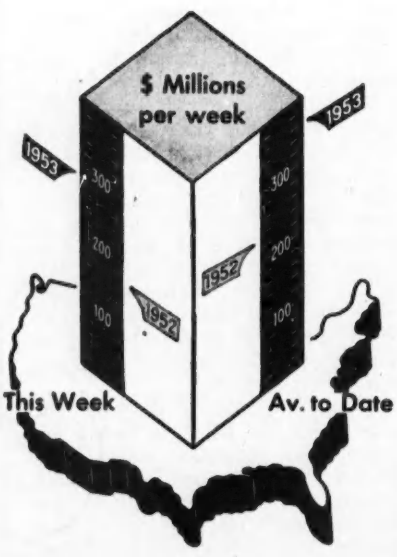
More than 1,000 home builders are participating in construction of permanent, privately financed defense housing, the Housing and Home Finance Agency disclosed last week.

Of that number, more than 730 builders had started 45,000 units and had completed 29,000 of the units started.

Up to Jan. 21, HHFA had programmed 98,000 units for critical defense housing areas, and had approved builders' applications to build 87,000 of them.

Activity This Week

As reported to ENR
(in millions of dollars)

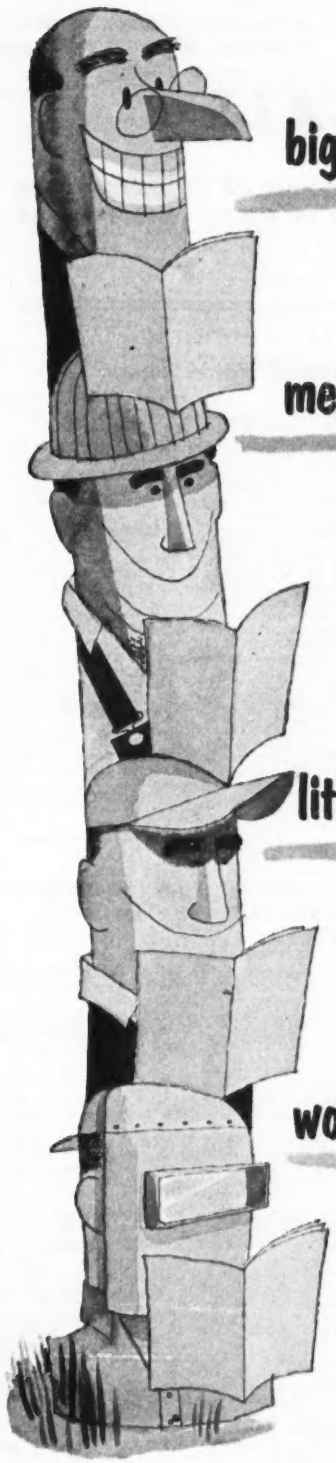


Contracts by type of work

	This Week	Cumulative 6 wks 1953	1952	% chge
Waterworks	$2.2	$21.7	$37.6	−42
Sewerage	4.6	53.8	21.0	+156
Bridges	7.8	62.1	22.4	+177
Highways	42.7	159.1	126.4	+26
Earthwork, waterways	2.5	56.0	47.8	+17
Buildings				
Public	22.0	234.7	163.3	+44
Housg., pub.	24.5	115.1	79.6	+44
Housg., priv.	59.9	570.9	301.0	+90
Commercial	22.0	105.1	36.9	+185
Industrial	79.5	610.8	376.9	+62
Unclassified	20.8	185.7	151.0	+23
Total	**$288.5**	**$2,175.0**	**$1,363.9**	**+59**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	Feb.	587.19	282.26	123.09
	Jan.	587.27	282.30	123.11
Bldg. cost	Feb.	425.24	229.87	120.88
	Jan.	425.04	229.76	120.82
Volume	Jan.	714	290	206



THE BIG BOSS behind the huge mahogany, the medium-sized boss pushing a fleet of bull-dozers, the would-be boss up in the ironwork, and the little bosses all over the country – they face a load of problems other than how to push a slide rule or drive a rivet.

"What's the union going to do?", "What's the best way to finance new equipment?", "What do I have to report to Washington?", "What do bricks cost in Boston?" – these are just as important to the boss today as "How much stress will that girder take?"

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OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY. SEND ALL ADVERTISEMENTS TO CLASSIFIED ADVERTISING DIVISION, 29TH FLOOR, McGRAW-HILL PUB. CO., INC., 330 W. 42 ST., N. Y. 36, N. Y.

Bids: February 24, 1953

Construction of Eleven Piers

Sealed proposals will be received by the West Virginia Turnpike Commission for:
CONTRACT NO. 13

The work to be done under this Contract consists generally of the construction of the eleven piers and two abutments for the Kanawha River Bridge at about Mile 85 along the route of the Turnpike near Reed in Kanawha County, all in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

The principal items of work include:

	Approximate Quantity
Excavation—River Piers	1,320 Cu. Yds.
Excavation—Land Piers	4,600 Cu. Yds.
Treated Timber Piles	19,600 Lin. Ft.
Steel Piles	2,850 Lin. Ft.
Concrete	6,630 Cu. Yds.
Reinforcement Steel	575,000 Lbs.

Proposals will be received at the office of the West Virginia Turnpike Commission, 1340 Wilson Street, Charleston 1, West Virginia, until 9:00 A.M. Eastern Standard Time, and thereafter at the Woman's Club of Charleston, Virginia and Elizabeth Streets, Charleston, West Virginia, until 10:00 A.M. Eastern Standard Time on February 24, 1953, at which time and place the proposals will be publicly opened and read.

Contract documents may be examined by prospective bidders during office hours after January 27, 1953 at the offices of the General Consultants, Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia, and 55 Liberty Street, New York 5, New York.

Contract documents will be furnished for Fifteen Dollars ($15.00) for each set, upon application to Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia (mailing address: P. O. Box 5266, Capitol Station, Charleston, West Virginia). Payment will not be refunded and contract documents are not required to be returned. Checks for plans and specifications shall be drawn payable to Howard, Needles, Tammen & Bergendoff.

Proposals must be made upon the proposal forms furnished by the Commission in the manner designated in the Specifications, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a CASHIER'S or CERTIFIED CHECK OR PROPOSAL BOND in favor of the West Virginia Turnpike Commission FOR NOT LESS THAN FIVE (5) PER CENT OF THE AMOUNT OF THE PROPOSAL, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the day and hour named. Copies of the proposal form and proposal bond form to be used for submitting proposals, and of the special addressed envelope are furnished in detached form with the contract documents.

The contract will be awarded or the proposals rejected within thirty (30) days from the date of opening proposal. The right is reserved to reject any or all proposals, and to waive any or all formalities.

WEST VIRGINIA
TURNPIKE COMMISSION
D. Holmes Morton, Chairman

January 20, 1953

Bids: March 7, 1953

New Municipal Building and Library, Westfield, N. J.

Sealed Bids will be received by the Mayor and Council of the Town of Westfield at the Municipal Building, 121 Prospect Street, Westfield, New Jersey, on Saturday, March 7, 1953 at 10 A.M. for the construction of a new Municipal Building and Library, together with incidental work in connection therewith.

Bids will be taken separately for (1) General Construction, (2) Structural Steel and Miscellaneous Iron, (3) Heating and Ventilating, (4) Plumbing, (5) Electrical Work.

Drawings and specifications for the proposed work, prepared by Ray O. Peck, Architect are on file in the office of said Architect at 1 Park Drive, Westfield, New Jersey and at the office of the Town Clerk in the Municipal Building, Westfield, New Jersey and may be inspected by prospective bidders during business hours. Bidders will be furnished with a copy of the specifications and plans by the Architect on proper notice and payment of ($25.00) twenty-five dollars, which payment will be refunded to the person, firm or corporation making a legal bid and returning the plans and specifications in good order within ten days after the bids are received.

Bids must be made on standard bid form in the manner designated by the specifications, must be enclosed in sealed envelopes, bearing the name and address of the bidder and the branch of work covered by the bid on the outside, addressed to the Mayor and Council of the Town of Westfield, New Jersey and must be accompanied by a certified check, made payable to the Treasurer of the Town of Westfield, for ten (10) per cent of the amount bid, providing said check shall be not more than $50,000, and be delivered at the place and on the hour above named. Bids must also be accompanied by a surety company certificate stating that said surety company will provide the bidder with the required bond.

Bids made which are contingent upon the acceptance of any other bid will be rejected and the Mayor and Council reserves the right to reject any or all bids, if, in the interest of the Town, it is deemed advisable to do so.

Jane F. Jones
Town Clerk

Bids: February 10, 1953

Gasoline-Engine Generator Sets

CONTRACT 437

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, February 10, 1953, for Contract 437, for furnishing, testing, delivering and unloading gasoline-engine generator sets with switchgear and appurtenances for the West Branch and the Kensico South effluent chambers of the Delaware Aqueduct, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of two thousand dollars ($2,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, requirements as to surety, etc., can be obtained in Room 1316 at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

Bids: February 24, 1953

Elevated Water Storage Tank

THE PORT OF NEW YORK AUTHORITY
HOBOKEN - PORT AUTHORITY PIERS
CONTRACT HP-110.013

Sealed proposals for the furnishing and erection of an elevated steel water storage tank, complete with tower and accessories, on concrete foundations to be constructed by others, at the Hoboken - Port Authority Piers at Hoboken, N. J., will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, February 24, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, February 5, 1953.

Bids: February 16, 1953

7,580 Tons "H" Piles (14-BP-89# Section) Hoboken Piers, N. J.

THE PORT OF NEW YORK AUTHORITY
PROPOSAL NO. 26

Sealed proposals for the supplying of 7,580 tons ("H" Piles (14-BP-89# Section) for Hoboken Piers, Hoboken, N. J., will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111-8th Ave., New York 11, N. Y., until 11:00 A.M. (E.S.T.) Monday, February 16, 1953, at which time and place proposals will be opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3883) will be received at Huron, South Dakota, until March 5, 1953, for furnishing labor and materials for additions and modifications to Huron, Mount Vernon, Sioux Falls, and Watertown Substations for 115-kv operations, Transmission Division, South Dakota, Missouri River Basin Project. Location: Various locations in South Dakota. Principal items are: The construction of foundations for steel structures and equipment; furnishing and erecting 120,000 pounds structural steel; and all required work to complete the additions and modification of the substations including installation of electrical equipment, cables, wires, conduit, and other installations; and other work. Completion time 425 days. For particulars, address Bureau of Reclamation, Huron, South Dakota; or Building 53, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner

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THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

Bids: February 11, 1953

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 11th day of February 1953, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1						
G. L. NICKERSON, District Engineer, 353 Broadway, Albany, N. Y.						
Albany & Schenectady	M.T. 53-2 S.T. 53-6 R.C. 53-15	N. Y. State Thruway— Mohawk Sect. Subs. 1 & 2 (Western Ave.-Schenectady Co. Line); Schenectady-Guilderland S.H.577; Schenectady Co. Line-Guilderland S.H.5636; 2 Interchanges; 8 CrossRoads	Acc. 6.242 Thy. 7.616	9" Cem. Conc. Pavt. 2 @ 25' Var. Wide = 11.799 Mi. Asph. Conc. Ty. 1A Opt.= 0.694 Mi. T.C. Graded Grav. (Bit. Mulch) = 1.365 Mi. 6 Gr. Sep. Alpha I-Beams 207.8'; 202'; 209.2'; 200'; 200'; & 200'.	$320,000 Plans $100	$5,825,000
Albany	C 53-6	City of Albany: Washington Ave. Extension	0.39	9" Cem. Conc. Pavt. 2 @ 24' Var. Wide	$11,000 Plans $10	$189,000
Greene	FARC 53-9	Greenville-Coxsackie Pt. 3 S.H.1365 Project S-"81(1)	1.08	Asph. Conc. Ty. 1A Opt. R.C. Closed Box Br. 22.6'	$14,000 Plans $10	$250,000
Greene	C.T. 53-1 S.T. 53-1 R.C. 53-5	N. Y. State Thruway— Catskill Section-Subd. 7 (Rte. 23-A-Catskill Creek) Co. Rd. 47; Palenville-Catskill, S.H.8231	Thy. 3.94 Acc. 1.32	9" Cem. Conc. Pavt. 2 @ 25' Var. Wide = 4.35 Mi. Asp. Conc. Ty. 1A Opt.= 0.91 Mi. 2 Gr. Seps. Alpha I-Beam 203' & 208' 2 Brs. Deck Truss 600' and 600' with 121' Alpha I-Beam Appr.	$450,000 Plans $100	$8,344,000
Greene	C.T. 53-2 S.T. 53-5 R.C. 53-12	N. Y. State Thruway— Catskill Section-Subd. 7 (Limestreet-Rte. 9W); Greenville-Coxsackie Pt. 3, S.H.1365; Co. Rd. 9; Co. Rd. 49	Thy. 5.63 Acc. 0.84	9" Cem. Conc. Pavt. 2 @ 25' Wide = 5.63 Mi. Asp. Conc. Ty. 1A, Opt.= 0.84 Mi. Gr. Sep. Rig. Frame 31' Gr. Sep. R.C. Arch 34' Gr. Sep. Alpha I-Beam 263'	$335,000 Plans $50	$6,075,000
DISTRICT No. 2						
LACY KETCHUM, District Engineer, 109 No. Genesee St., Utica, New York						
Montgomery	M.T. 53-1 S.T. 53-4 R.C. 53-11	N. Y. State Thruway— Mohawk Section-Subd. 14 (Randall-So. Amsterdam); Fultonville-Amsterdam Pts. 1 & 2, S.H.5656-8313; Fultonville Interchange Co. Rd. 30; Co. Rd. 119; Acc. Rds. A&L Relocation of W.S.R.R. Tracks	Thy. 13.34 Acc. 4.65	9" Cem. Conc. 2 @ 25' Var. Wide = 14.81 Mi. Asp. Conc. Ty. 1A, Opt.= 2.76 Mi. Relocating R.R. Tracks = 0.38 Mi. Misc. Work = 0.04 Mi. 2 Brs. R.C. Closed Boxes 30', 48' 1 Br. Deck Girder 528.7' 5 Gr. Seps. Alpha I-Beams 128.6'; 200.2'; 201', 404', 324'	$670,000 Plans $100	$12,252,000
DISTRICT No. 3						
WM. ROBINSON, District Engineer, Weigh Lock Building, Syracuse, New York						
Onondaga	O.T. 53-4	N. Y. State Thruway— Ontario Section Subd. 7 & 8A (Rte. 48 and Rte. 57 Interchanges)	4.64	9" Cem. Conc. Pavt. (Ramps) 12'-30' Wide Gr. Sep. Alpha I-Beam 198' Gr. Sep. Alpha I-Beam 198'	$60,000 Plans $25	$1,017,000
DISTRICT No. 4						
ELMER G. H. YOUNGMANN, District Engineer, Barge Canal Terminal, Rochester, New York						
Monroe	LOSP 53-2	Lake Ontario State Parkway Sect. B	.....	Protection Stone Groins at Cowsucker Creek	$1,000 Plans $10	$18,000
DISTRICT No. 10						
J. J. DARCY, District Engineer, Montauk Highway at Little East Neck Rd., Babylon, Long Island, New York						
Bronx	FAMDE 53-2	Major Deegan Expressway Contract No. 10 Project U-1082(13)	0.66	Grading & Misc. Wk. Gr. Sep. Alpha I-Beam 98.5'	$150,000 Plans $50	$2,742,000
Nassau	FARC 53-10	Hillside Avenue Pt. 1 S.H. 1948 Project U-1002(2)	2.52	Asp. Conc. Ty. 1A, Opt.	$48,000 Plans $10	$874,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3878) will be received at Phoenix, Arizona, until March 3, 1953, for furnishing labor and materials for additions to Cochise and Phoenix Substations, Davis Dam Project. Location: Near Cochise, Arizona, and near Phoenix, Arizona. Principal items are Cochise Substation—Constructing structure foundations, erecting steel structures, and completing electrical work.

U. S. Government

Phoenix Substation—Constructing structure foundations, furnishing and erecting steel structures, and completing electrical work; and other work. Completion time: Cochise Substation—190 days. Phoenix Substation—170 days. For particulars, address Bureau of Reclamation, Phoenix, Arizona; or Building 53, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner

OFFICIAL PROPOSALS

Bids: February 24, 1953

Performing Required Grading & Drainage of W. Virginia Turnpike

Sealed proposals will be received by the West Virginia Turnpike Commission for:

CONTRACT NOS. 23, 23A, 23B

The work to be done under Contract 23 consists in performing the required grading and drainage for approximately 11 miles of the West Virginia Turnpike including the substructures for bridges and a box culvert. This work is located between the overpass at Route 40, mile 25, and Little Whitestick Creek, mile 36, Raleigh County, West Virginia, and is in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

The work to be done under Contract 23A consists in performing the required grading and drainage for approximately 6.7 miles of the West Virginia Turnpike including the substructures for underpasses and a box culvert. This work is located between the overpass at Route 40, mile 25, and Piney Creek, mile 32, Raleigh County, West Virginia, and is in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

The work to be done under Contract 23B consists in performing the required grading and drainage for approximately 4.3 miles of the West Virginia Turnpike including the substructures for bridges. This work is located between Piney Creek, mile 32, and Little Whitestick Creek, mile 36, Raleigh County, West Virginia, and is in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

The Principal items of work include:

	Approximate Quantity 23A	23B
Clearing and Grubbing	106 acres	86 acres
Excavation (all types)	1,721,000 c.y.	1,132,000 c.y.
Embankment	1,563,000 c.y.	1,093,000 c.y.
Concrete	2,030 c.y.	4,850 c.y.
Reinf. Steel	211,600 lbs.	360,800 lbs.
Culvert Pipes and under drains	16,000 l.f.	11,000 l.f.
Steel Piles		576 l.f.

Contract 23 consists of the combined approximate quantities of Contracts 23A and 23B.

Proposals will be received at the office of the West Virginia Turnpike Commission, 1340 Wilson Street, Charleston 5, West Virginia until 9:00 A.M. Eastern Standard Time, and thereafter at the Woman's Club of Charleston, Virginia and Elizabeth Streets, Charleston, West Virginia until 10:00 A.M. Eastern Standard Time, on February 24, 1953, at which time and place said proposals will be publicly opened and read.

Contract documents may be seen and may be inspected by prospective bidders during office hours, after January 27, 1953, at the office of Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia, and at the offices of the Engineers, Fay, Spofford & Thorndike, 11 Beacon Street, Boston 8, Mass., and 305 Reservoir Road, Beckley, West Virginia.

Contract plans and specifications will be furnished for Thirty-Five Dollars ($35.00) for each complete set, which is not refundable, upon application to Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia. Cross Sections are bound separately, and will be furnished for Ninety Dollars ($90.00) for each complete set, which is not refundable. Partial sets can be furnished at cost upon application. Make checks payable to Howard, Needles, Tammen & Bergendoff.

Proposals must be made upon the proposal forms furnished by the Commission in the manner designated in the Specifications, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a CASHIER'S or CERTIFIED CHECK or PROPOSAL BOND in favor of the West Virginia Turnpike Commission FOR NOT LESS THAN FIVE (5) PER CENT OF THE AMOUNT OF THE PROPOSAL, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the day and hour named. Copies of the proposal form and proposal bond form to be used for submitting proposals, and of the special addressed envelope are furnished in detached form with the contract documents.

The contract will be awarded or the proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all proposals, and to waive any or all formalities.

WEST VIRGINIA
TURNPIKE COMMISSION
D. Holmes Morton, Chairman

January 21, 1953

U. S. Government

GOVERNMENT OF THE DISTRICT OF COLUMBIA, DIRECTOR OF HIGHWAYS, D. C., January 29, 1953. SEALED PROPOSALS will be received in Room 429, District Building, 14th and E Streets, N.W., Washington 4, D. C., until 2:00 PM, February 26, 1953, EASTERN STANDARD TIME, and then publicly opened and read for constructing one (1) overpass, four-hundred (400) lineal feet of depressed roadways, retaining walls and a trunk sewer in the vicinity of East Capitol Street and Kenilworth Avenue, N.E., respectively. Approximate quantities of major items in the overpass, the ramps and depressed roadways are: 65,100 cubic yards of excavation, 59,400 lineal feet of treated timber piles, 3,320 cubic yards concrete, 271,000 pounds reinforcing steel and 186,000 pounds structural steel. Approximate quantities in the 15'x10'6" trunk sewer are: 36,000 lineal feet of treated timber piles, 22,000 cubic yards excavation, 4,560 cubic yards concrete, and 604,000 pounds reinforcing steel. Proposal forms, plans and specifications may be obtained from the Secretary, Contract Board, D.C., Room 429, District Building, upon the deposit of a certified check made payable to the Collector of Taxes, D. C., in the amount of Fifty Dollars ($50.00). Telephone NAtional 8-6000, Extension 2307.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3882) will be received at Fort Peck, Montana, until 10 a.m., MST, March 12, 1953, for furnishing labor and materials for Missouri Diversion Dam and Little Porcupine Power Plant, Missouri Diversion Unit, Montana, Missouri Souris Division, Missouri River Basin Project. Location approximately 20 miles west of Wolf Point, Montana. Principal items are: 3,400,000 cu. yds. excavation; 1,300,000 cu. yds. dike embankment; 81,000 cu. yds. concrete; furnishing and handling 119,000 barrels cement; furnishing and placing 4,000,000 pounds reinforcement bars; installing 950,000 pounds gates, trashracks, and cranes; and other work. Completion time 1,000 days. For particulars, address Bureau of Reclamation, Fort Peck, Montana; or Building 53, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3877) will be received at Ephrata, Washington, until March 3, 1953, for furnishing labor and materials for earthwork and structures for East Low canal from Sta. 2980 to Sta. 4580, and Scooteney from Sta. 0 to Sta. 263, Columbia Basin Project, Washington. Location in vicinity of Warden, Washington. Principal items are: 4,480,000 cu. yds. excavation; 12,800 cu. yds. concrete; 450,000 pounds, erecting steel bridges; furnishing and installing gates and miscellaneous metalwork; and other work. Completion time 550 days. For particulars, address Bureau of Reclamation, Ephrata, Washington; or Building 53, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3880) will be received at Tracy, California, until February 25, 1953, for furnishing labor and materials for earthwork, concrete pipe lines, and structures for Laterals 5.3, 6.2, 7.1, 7.3, and 9.1, Contra Costa County Water District, Contra Costa Canal Distribution System, Central Valley Project, California. Location: Near Antioch, California. Principal items are: 33,000 cu. yds. excavation; 200 cu. yds. concrete; 55,000 lin. ft. of concrete pressure pipe, 12- to 27-inch diameter; miscellaneous pipe line structures and metalwork; and other work. Completion time 300 days. For particulars, address Bureau of Reclamation, Tracy, California; or Building 53, Denver Federal Center, Denver Colorado.

MICHAEL W. STRAUS, Commissioner

SEALED PROPOSALS FOR THE PURCHASE OF 1854 TONS FERROUS SCRAP OFFERED FOR SALE BY PANAMA CANAL COMPANY UNDER INVITATION 15 (previously called Circular 14) will be received at Panama Canal Company, 24 State St., New York 4, N. Y. and at Office of Superintendent of Storehouses, Balboa, Canal Zone until 10:30 A.M. EST February 26, 1953. Blanks and information available at 24 State St., New York 4, N. Y.

OFFICIAL PROPOSALS

Bids: February 24, 1953

Construction of Substructures for Bridges

Sealed proposals will be received by the West Virginia Turnpike Commission for:

CONTRACT NO. 19

The work to be done under this Contract consists in performing the required grading and drainage for approximately 4.46 miles of the West Virginia Turnpike including the relocation of approximately 1.56 miles of side roads plus the construction of the substructures for bridges known as structures 5, 6 and 7. This work is located between the Village of Gardner at about mile 4.8, and the Bluestone River mile 9.0, Mercer County, West Viriginia, and is in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

The Principal items of work include:

	Approximate Quantity
Cleaning and Grubbing	48 Acres
Excavation (all types)	1,100,000 C. Y.
Embankment	1,000,000 C. Y.
Concrete	1,920 C. Y.
Reinforcing Steel	110,300 Lbs.
Steel Piles	1,494 Lin. Ft.
Culvert Pipes and Underdrains	7,600 Lin. Ft.

Proposals will be received at the office of the West Virginia Turnpike Commission, 1340 Wilson Street, Charleston 5, West Virginia until 9:00 A. M. Eastern Standard Time, and thereafter at the Woman's Club of Charleston, Virginia and Elizabeth Streets, Charleston, West Virginia until 10:00 A. M. Eastern Standard Time, on February 24, 1953, at which time and place said proposals will be publicly opened and read.

Contract documents may be seen and may be inspected by prospective bidders during office hours, after January 30, 1953, at the office of Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia, and at the offices of the Engineers, Capitol Engineering Corp., Dillsburg, Pennsylvania and at 106 North 5th Street, Princeton, West Virginia.

Contract plans and specifications will be furnished for Twenty-Five Dollars ($25.00) for each set, which is not refundable, upon application to Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia. Cross Sections are bound separately and will be furnished for Forty-Five Dollars ($45.00) for each set. Make checks payable to Howard, Needles, Tammen & Bergendoff.

Proposals must be made upon the proposal forms furnished by the Commission in the manner designated in the Specifications, and must be enclosed in sealed special addressed envolopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a CASHIER'S or CERTIFIED CHECK or PROPOSAL BOND in favor of the West Virginia Turnpike Commission FOR NOT LESS THAN (5) PER CENT OF THE AMOUNT OF THE PROPOSAL, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the day and hour named. Copies of the proposal form and proposal bond form to be used for submitting proposals, and of the special addressed envelope are furnished in detached form with the contract documents.

The contract will be awarded or the proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all proposals, and to waive any or all formalities.

WEST VIRGINIA TURNPIKE COMMISSION
D. Holmes Morton, Chairman

January 24, 1953

Bids: February 24, 1953

Grading & Drainage of Turnpike

Sealed proposals will be received by the West Virginia Turnpike Commission for:

CONTRACT NO. 27

The work to be done under this Contract consists in performing the required grading and drainage for approximately 9.0 miles of the West Virginia Turnpike including eight bridge substructures and the relocation of approximately 2.4 miles of State Highways. This work is located between the Town of Miami, mile 71.3, and the Town of Chesapeake, mile 80.3, Kanawha County, West Virginia, and is in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

The Principal items of work include:

	Approximate Quantity
Clearing and Grubbing	320 Acres
Excavation (all types)	3,180,000 C.Y.
Embankment	1,700,000 C. Y.
Concrete	9,725 C. Y.
Reinforcing Steel	750,000 Lbs.
Culvert Pipes and Underdrains	12,000 Lin. Ft.
Steel Piles	12,500 Lin. Ft.

Proposals will be received at the office of the West Virginia Turnpike Commission, 1340 Wilson Street, Charleston 5, West Virginia until 9:00 A.M. Eastern Standard Time, and thereafter at the Woman's Club of Charleston, Virginia and Elizabeth Streets, Charleston, West Virginia until 10:00 A.M. Eastern Standard Time, on February 24, 1953, at which time and place said proposals will be publicly opened and read.

Contract documents may be seen and may be inspected by prospective bidders during office hours, after January 30, 1953, at the office of Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia, and at the offices of the Engineers, Gannett Fleming Corddry & Carpenter, Inc., 123 Forster Street, Harrisburg, Pennsylvania, and at 6218 Penn Avenue, Pittsburgh 6, Pennsylvania, and at Chesapeake, West Virginia.

Contract plans and specifications will be furnished for Thirty Five Dollars ($35.00) for each set, which is not refundable, upon application to Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia. Cross Sections are bound separately and will be furnished for One Hundred Dollars ($100.00) for each complete set, which is not refundable. Partial sets can be furnished at cost upon application. Make checks payable to Howard, Needles, Tammen & Bergendoff.

Proposals must be made upon the proposal forms furnished by the Commission in the manner designated in the Specifications, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a CASHIER'S or CERTIFIED CHECK or PROPOSAL BOND in favor of the West Virginia Turnpike Commission FOR NOT LESS THAN FIVE (5) PER CENT OF THE AMOUNT OF THE PROPOSAL, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the day and hour named. Copies of the proposal form and proposal bond form to be used for submitting proposals, and of the special addressed envelope are furnished in detached form with the contract documents.

The contract will be awarded or the proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all proposals, and to waive any or all formalities.

WEST VIRGINIA TURNPIKE COMMISSION
D. Holmes Morton, Chairman

January 24, 1953

Bids: March 3, 1953

Repairing and Replacing Piles on Columbia Street Pier

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY GRAIN TERMINAL
CONTRACT GT-120.002

Sealed proposals for repairing and replacing piles on the Columbia Street Pier at the Port Authority Grain Terminal, Foot of Columbia Street at Gowanus Bay, Brooklyn, New York, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, March 3, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, February 5, 1953

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These positions offer excellent working conditions with paid vacations, sick leave and participating group insurance program. Most locations are working scheduled 5 day 45 hour work week with overtime after 40 hours.

Replies will be treated confidential and arrangements will be made to interview selected applicants. Please submit complete resume stating experience, education, salary required and date available to

THE H. K. FERGUSON CO.

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FERGUSON BUILDING **CLEVELAND 14, OHIO**

WANTED

TIMEKEEPER—for New York Metropolitan Area. Occasional out of town travel. Single experienced man with car and steel erection background preferred.

TIMEKEEPER—for work on Atlantic Coast Area mainly New England to Virginia. Must travel. Single, experienced man with car and steel erection background preferred.

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P-6718, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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$8,000 to $10,000 salary

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P-6713, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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An Alert Mechanical Engineer with Some Knowledge of Electrical Engineering . . . Must Be a Good Calculator . . .

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STRUCTURAL STEEL DRAFTSMAN, DETAILER, AND CHECKER

Experienced, First-Class, Civil Engineer Graduate preferred, permanent position, top rate.

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Desire engineers familiar with water pipe design, mechanical engineers for equipment design and fabrication, men familiar with fabrication of steel cylinders and reinforcing cages, also men with experience and knowledge of prestressing as it pertains to concrete pressure pipe. Also desire superintendents capable of taking complete charge of large projects for pressure and non pressure pipe.

All correspondence will be treated in strictest confidence to avoid embarrassment with present employers.

P-6406, Engineering News-Record
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RW-6367, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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This is a permanent position for the right man with a rapidly expanding organization. Please write giving age, physical condition, marital status and full details of experience. Recent snapshot optional.

OUR EMPLOYEES KNOW OF THIS AD

P-6323 Engineering News Record
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Exceptional opportunity for a thoroughly experienced structural engineer who can estimate & sell structural steel for all types of buildings, fabricated & erected.

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SW-6708, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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TRUCK CRANES

SECTIONAL BOOM LENGTHS TO 130 FEET

LIMA & P & H CRAWLER CRANES

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Model 3500 — crane or dragline — 80 ft. boom — manual swing — 20' or 30' jibs — 60 ton lifting capacity — or 2½ c.y. drag bucket.

Model 2000-B — crane or dragline — 60 ft. boom — manual controls — 20' jib — 25 ton lifting capacity — or 1¼ c.y. drag bucket.

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New Model 3500 Speederane, dragline, clamshell and lifterane, 60-ton capacity.
New Ingersoll Rand 600' Gyro-Flo Air Compressor.
New Lorain Truck Crane, 25 Ton capacity.

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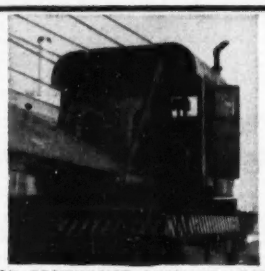

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AAA condition, with Shovel Front attachment.

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¾ yd. LS71 Link Belt 45 ft. Crawler Crane, Caterpillar Diesel (Dragline available)

New TD 14A International Angledozer

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175' boom. Mast 74'5". Legs 105'6". Sills 75'9". 30' bullwheel. With 200 HP 3 drum electric hoist 3/60/440. With 30 HP independent elec. swinger.

Derrick will lift 12 tons at 178' radius.

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3—1951 Ford F6 Flatracks
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M. REINFORCING STEEL EQUIP.
Bar Bender
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P. ENGINEERING EQUIPMENT
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S. RADIO COMMUNICATION EQUIP.
1—G.E. Mdl. SC-227 Base Stat.
1—G.E. Mdl. 203 Mobile Unit

V. HEATING EQUIPMENT
5—Frostguard Heaters
5—Mortemp Heaters
5—Silent Glow Heaters
Misc. Elec. & Oil Heaters
1—Dehydrator

Y. RIGGING GEAR
Wire Rope—Clamps—Thimbles
Splicing Tools
Misc. Steel & Wooden Blocks
Coffing Hoists

BB. CONSTRUCTION TIMBERS
Used Heavy Timbers 14" x 28"

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2—500 CFM Gardner-Denver Port.
1—125 CFM Jaeger Port.
1—15 H.P. C. P. Stationary
1—30 H. P. Gardner-Denver Stat.

H. LIGHT PLANTS
2—5 K.W. Onan Light Plants

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48" Blade Saw Mill
Band Saw
DeWalt Saws
Jointer

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Acet. & Oxy. Welding Equip.
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Chain Hoist—Battery Charger

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CC. STRUCTURAL STEEL
33" x 220# WF Beams
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7½ to 50 HP Elec. Turbine
Air Sump Pumps (Whirley)
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Jaeger 3" Port. Mdl. 3P

F. FORM HARDWARE
3000—1½"x24" C.P. Shee Bolts
6000—⅞"x22" C.P. Shee Bolts
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200—Burke Clamp Jacks

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2—Model AHW Sanstorm Units
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2—New, Unused 33' Pan-American 6 Bunk Trailers each with Heater, Daveno, Chair, Cooler, 2 Lavatories

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Mdl. 22 Ramsets - Twist Drills - Reamers - Bolt Stock & Dies - Misc. Wrenches - Bars - Hammers - Electric Drills

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Misc. Dimensional Lumber
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ROCK ISLAND DAM—12 Mi. So. of WENATCHEE, WASH.

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DISMANTLING STEEL FRAME BUILDINGS

90' x 242'—2 bays wide @ 42' and 48'; 11 bays long @ 22' ea. Flat "Box Type" Trusses.

Also steel frame monitor available. (Would make ideal buildings). 36' x 836'—2 bays wide @ 18' ea.; 38 bays long @ 22' ea. 12' clearance under beams.

In excellent condition. Now Available.

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DIESEL ELECTRIC LOCOMOTIVES

STANDARD GAUGE

1 G.E. 44 ton—400 HP

1 WH 65 ton—530 HP

EXCELLENT CONDITION

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1—Bucyrus-Erie 44-B Shovel. Excellent condition.

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1—Lorain 75B Crane and Dragline, Caterpillar D13000 Engine.

1—Bucyrus-Erie 22-B Crane and Dragline, Diesel Engine. 4 years old.

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Any make ROCK DRILL FURNACE

105 Cu. Ft. per minute AIR COMPRESSOR Stationary type Electric

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½ yd. Backhoe and Crane for rebuilding; not over 10 years old.

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Complete concrete paving spread including 2, 34 E pavers and Koehring 605 crane. Ten (10) 1952 F-6 Ford Batch trucks optional. Most Major equipment has worked two seasons and all in excellent condition. Located Kansas City, Missouri.

FS-6745, Engineering News-Record
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200 W. Bucyrus Erie walking dragline. State location, age and price F.O.B. cars.

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1 NEW Koehring 605 Dragline
2 NEW Northwest 25 Draglines
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HOISTS

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Independent Swingers

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Model 32 60' Boom, W.N. Best Oil Burner 50 H.P. Boiler

OLE HANSEN & SONS, INC.

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Age 3 yrs or less

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Buc. Erie 54-B Shovel-Dragline. Excellent.
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Erie 3 Comp. Agg., 400 bbl. Cement, 400 bbl. silo.
Large plant 212 yds., 6 compt., agg. and cement elevators, 56-S Mixer. Excellent.
Large plant 400 yds., 5 compt. with 2 yd. Koehring Mixers. Write for details.
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Rebuilt and in A1 Condition
Cat. D7 Bulldozer #4T3988
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B-E Hydraulic Bulldozer
R & G 1951
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It was TOUGH then... IT TOOK 19 CENTURIES TO COMPLETE THE GREAT CHINESE WALL. 1500 MILES LONG, 22 FEET HIGH, 25 FEET WIDE AT BASE, 12 FEET AT TOP. WORLD'S MOST GIGANTIC DEFENSIVE WORK.

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1—Mdl. 955-LC P&H 2½ yd. Crawler Crane, Ser. 5309, Cat. D17000 Diesel eng., 100' boom, 1½ KW light plant, tagline. Operate either from cab or remote control 32' hi tower. Ideal for dock or levee work, etc. Excel. condition.

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Portable, 2 Stage
3—500' Ing. Rand, 2 with Waukesha-Hesselman Diesel eng., one with Waukesha gas eng., mtd. 4 steel wheels & Pneu. tires.
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1—75 KW Diesel Generator, 220/440/60/3, power Cat. D-13000 Diesel eng., complete with control panels. LATE MODEL. Save Thousands of $$$$ from cost new price.

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1—Mdl. 190 Rex Single Pumpcrete #CP114, 4 cyl. Waukesha gas eng. With remixing hopper with 4 cyl. LeRoi gas eng. Recommended pumping distance 1,000', with 7" pipe. Max. vertical lift 110'. Cap. 23-30 cu. yds. per hour. Excel. shape and a real buy.

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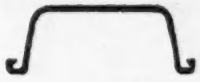

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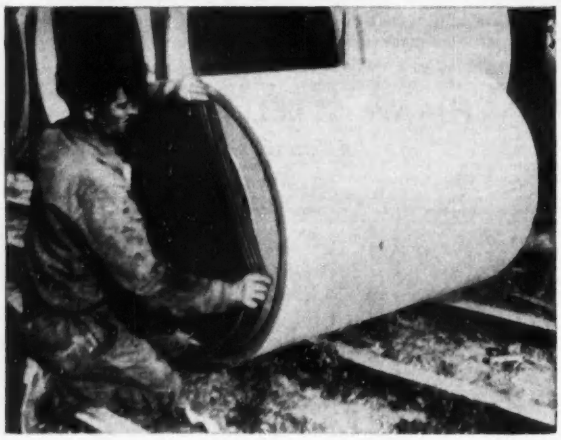
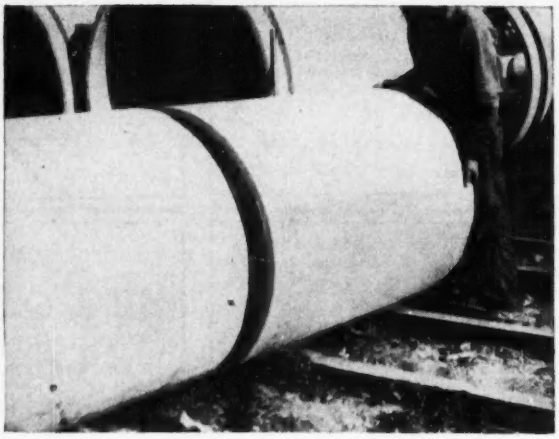




Tylox flexible-rubber pipe gaskets give fast, sure seal

It's a simple matter for the workman shown above to snap a Tylox Type A gasket over the tongue of a pipe section, immediately after coating the tongue with Tylox cement. Then, after checking to make sure that the leading edge of the gasket is even with the tongue edge, he can move on to the next section and worry no more about it.

Later on, as shown at the right above, the groove of its adjacent length in the ditch is similarly coated, the outer edge of the gasket is lubricated with a 25% solution of cement in kerosene for lubrication, and the two sections are forced together to form a tight seat and complete pack.

Now accepted as an aid to speedy pipeline installation, the gaskets represent years of experience in compounding and designing of rubber and an intensive study of the engineering and construction of pipelines. During this period of research one question was uppermost from engineers, pipe manufacturers and contractors: "Is rubber a durable, permanent material when used as a coupling medium?"

Hamilton Kent Mfg. Co., manufacturer of Tylox gaskets, uncovered the startling data that pipelines installed with rubber couplings as far back as 1891 were still in operation. Service records uncovered a scattered geographical representation with types of service ranging from natural gas and acetic acid to raw sewage and drainage. Pipe types were from steel and ceramic to rubber-lined steel and reinforced concrete, while diameters of pipes concerned went from 4 and 6-in. to 72 and 84-inchers. The company estimated that more than 200,000 miles of pipe are joined today in this manner.

Among the features claimed for the Tylox gaskets are: (1) resilient enough to compensate for angularity, expansion, contraction or soil stresses; (2) unaffected by wet-ditch conditions; (3) resistant to acids, alkalis and oils; (4) speedily assembled for lower "per-laid-foot" costs, etc. Tongue-and-groove pipe coupled with Type A gaskets must be concentric and have a uniform annular space. Tongue slope should be 8 or 12 deg, except on large pipe where the slope may be as low as 6 deg.

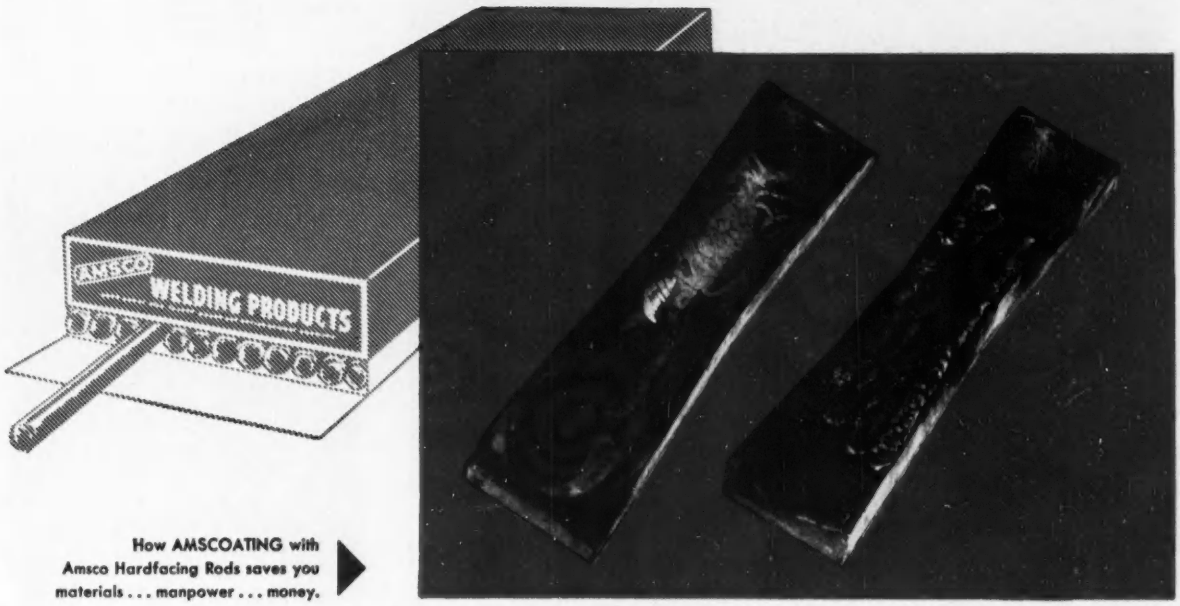
Type B Tylox gaskets are cast by pipe manufacturers, usually in "yarded" pipe or pipe in the kilns. They can be used in lines with head pressures up to 75 ft (as compared with pressures up to 50 ft on Type A). On the B Type, there are rings of vulcanized rubber, with ribs and fins running peripherally on the outside and the inside respectively. These fins are so designed that, as the pack is made, the resultant deformation sets up a strut action through the cross section of the gasket, driving the joint to a tight compressed seat. Bulletins, data and lists of jobs where the products have been specified and installed are all available from the manufacturer, Hamilton Kent Mfg. Co., Dept. R, Kent, Ohio.

Three types of flexible plastic pipe available

Flexible and semi-rigid plastic pipe is now being produced by Triangle Conduit & Cable Co. and in a short time rigid and high-impact types will be added to the line. The flexible pipe comes in three types, all made of polyethylene: non-toxic, industrial and suction.

The non-toxic piping is made in sizes from ½ in. to 6 in. and all sizes above 3 in. are available in coiled form. Its advantages are light weight; flexibility; resistance to rot, rust and electroyltic action; smooth interior which allows greater flow. The industrial type has these same characteristics but is recommended for removal of corrosive liquids, acids, alkalis, soaps, etc. The suction type, available in sizes from 2 to 6 in., is designed for higher pressures in larger sizes.

Semi-rigid pipe is made of Butyrate and is available in sizes ranging from ½ through 6 in. in 20-ft lengths with one end cemented. It's rust- and chemical-resistant, flexible enough to follow ditching contours, but of suf-



How AMSCOATING with Amsco Hardfacing Rods saves you materials . . . manpower . . . money.

Amscoating these guide shoes kicks tube production up

AMSCOATING . . . stands for control of wear by Hardfacing . . .

Hardfacing Rods—and recommendations for their use—are as sound as the manufacturer who makes them. AMSCO has been fighting wear for a half-century—first with Manganese Steel, and later with AMSCO Hardfacing Products.

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Continuous production, greater safety and better weldability are three good reasons for Amscoating Piercer Guide Shoes.

These Piercer Guide Shoes are used at a large midwestern steel plant to hold a rotating hot bar in alignment during the initial piercing operation. Wear was not the main problem here. The condition to be avoided was "pick-up", where the bar becomes fused with shoe and literally explodes.

To lick this problem, which can result in expensive equipment damage and loss of life, the welding superintendent chose Amsco Thermalloy No. 4 for three reasons:

1. **Complete elimination of pick-ups . . . for greater safety and higher production**
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TRACTOR-DRAWN SCRAPERS

Handle Any Earthmoving Job...

Here's Why... Gar Wood gives you a complete line of tractor-drawn four-wheel scrapers. Each one is built to "take the works" in the toughest going—give faster digging, faster dumping and greater accuracy . . . WIDE CUTTING EDGES let you use power where it counts—moves material back in pan easier . . . LIVE BOILING ACTION gives full heaping load every trip at less cost per yard . . . FORCED EJECTION and large apron opening gives faster dumping and controlled spreading—so accurate that you can often finegrade! . . . CENTER LINE SHEAVES mean far longer cable life . . . Optional tire sizes available to meet all flotation requirements on any job.

GAR WOOD CABLE CONTROLS

Model 281, double-drum unit, gives maximum scraper accuracy. Planetary gearing makes cable drum more sensitive to smallest variations in control levers. Easy to operate, adjust, service and maintain.

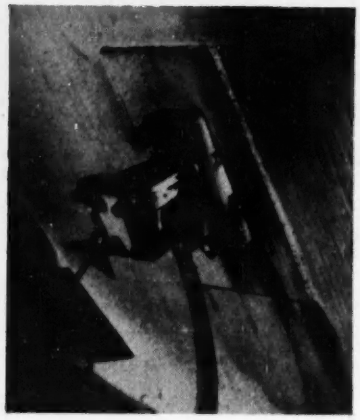
GAR WOOD INDUSTRIES

GAR WOOD INDUSTRIES, INC.

Findlay Division • Executive Offices • Wayne, Michigan

F-534

ficient impact strength to eliminate special care in backfilling, according to the manufacturer. PLASTIC PRODUCTS DIV., TRIANGLE CONDUIT & CABLE CO., INC., NEW BRUNSWICK, N. J.



Air-cushioned vibrator is practically noiseless

According to the manufacturer, people working near a Cleveland Air-Cushioned vibrator hardly know it is operating. All of the bothersome noise has been eliminated and the unit is being used for many varied applications.

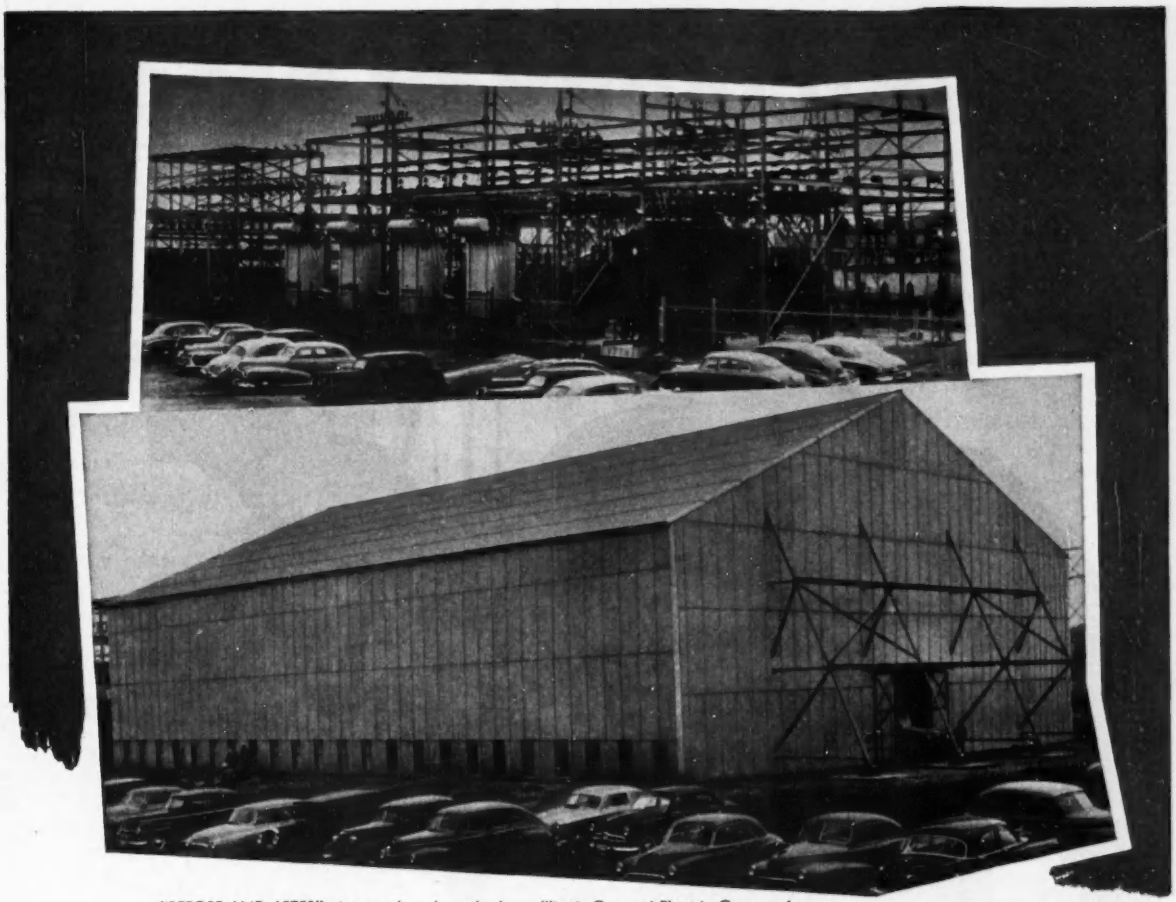
The photo here shows one installed on an aggregate bin for loosening and insuring free flow of concrete block materials. Vibration speed and vibration intensity can be varied at will. Other uses in the construction field include installation on bins, hoppers, chutes, Pumpcrete tubes and on all kinds of concrete wall and floor forms. CLEVELAND VIBRATOR CO., 2828 CLINTON AVE., CLEVELAND, OHIO.

New Product Briefs

Reardon Industries Inc., 2837 Stanton Ave., Cincinnati, Ohio, makes colorings that go into concrete mixes for identifications. One application, for instance, designates concrete used to encase lines carrying petroleum, electrical conduit, etc. to prevent breakage during renovation, etc. U. S. Engineers on a dam repair job in W. Virginia used color identification to gauge placing of new concrete and determine its complete entry under the original structure.

• **The Robert Austin Corporation,** 51 Albany Street, Boston 11, Mass. makes an improved "Smootgrip" vise jaw for tubing or plated pipe which it says will not mar, scratch or distort material being used.

(*Continued on page* 148)



"BEFORE AND AFTER" pictures show how the Iowa-Illinois Gas and Electric Company's sub-station at Bettendorf, Iowa, was protected by an "umbrella type" cover of "Century" Asbestos-Cement Corrugated. **Erection Contractors:** Illinois Roofing and Insulation Company, Chicago, Illinois.

For a special problem —such as an "umbrella" for a sub-station— or for 1,000-and-1 typical industrial applications,

"CENTURY" asbestos-cement corrugated roofing and siding is the satisfying, economical solution

"Century" Asbestos-Cement Corrugated solved an unusual problem at Bettendorf, Iowa. The 69,000-volt sub-station there of Iowa-Illinois Gas and Electric Company had an hour's service breakdown in early 1950. It was found that a sulphurous acid mixture of smoke and fog, swept in from a nearby generating station by the wind when in a certain quarter, had collected on the insulators and caused flash-overs or shorts. It was decided that the entire sub-station should be put under cover (which rarely, if ever, is done) as protection against this condition, and a steel framework covered with "Century" Roofing and Siding was erected. This "umbrella" has kept the insulators clear, and service uninterrupted.

In this, as in countless less unusual cases, experience has shown that "Century" Asbestos-Cement Corrugated is an ideal covering. It is composed of asbestos fiber and portland cement, subjected to pressure to form a dense product, strong and durable. "Century" Asbestos-Cement Corrugated *can't burn*, is highly resistant to weather, rot, rust, and corrosive fumes, is proof against rats, termites, and other destructive insects.

The moderate cost of "Century" Asbestos Corrugated, erection and low maintenance expense, all contribute to an economical installation. Additional and substantial savings can also be effected by using TOP-SIDE* Fasteners over any steel framework, which eliminates scaffolding. Once up it stays and needs no protective painting. Consider the savings in labor alone.

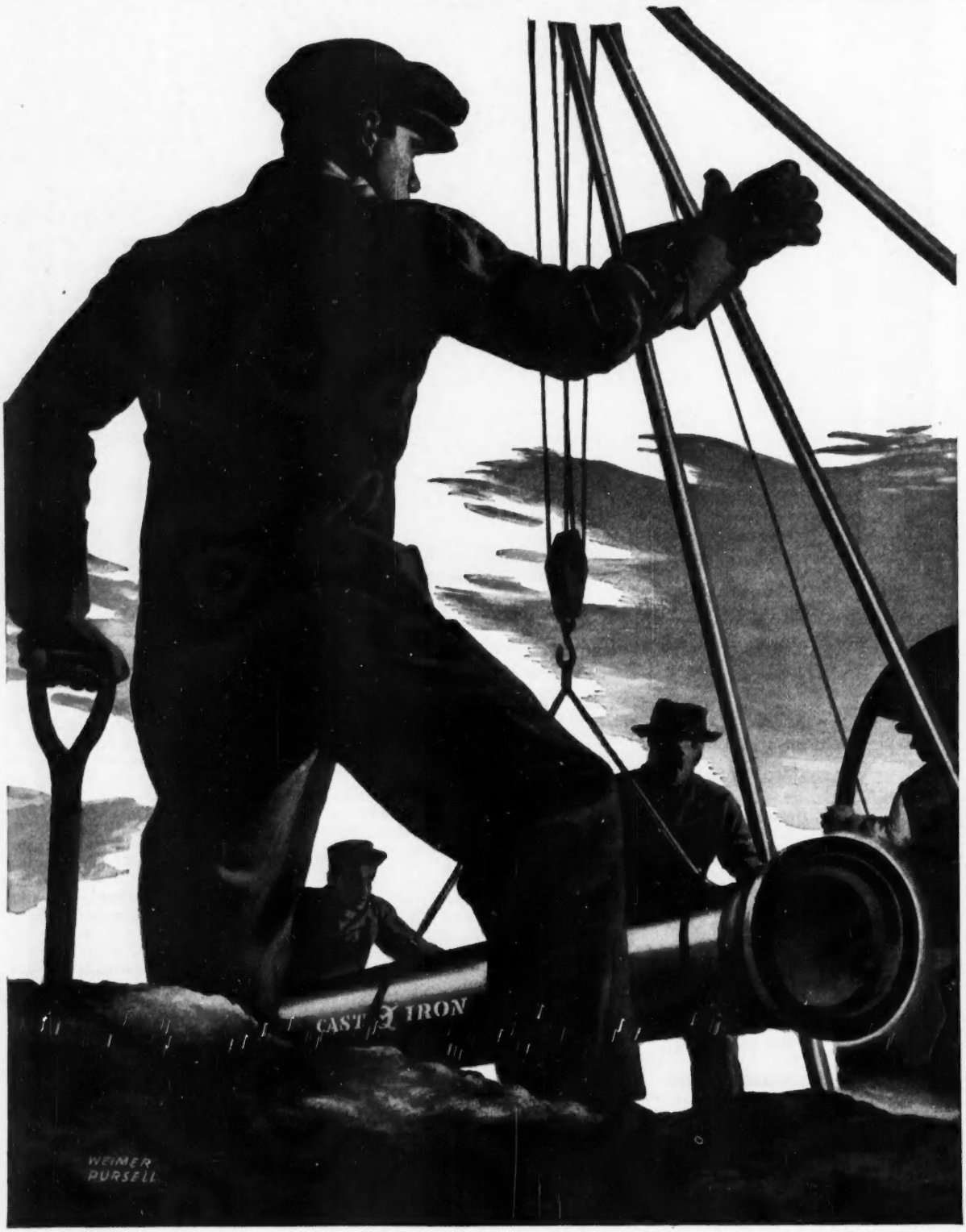
Write us for further details . . . and name of your nearest distributor.

*Ⓡ H & B Enterprise Corporation

Nature made Asbestos . . .
Keasbey & Mattison has made it serve mankind since 1873

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

An ounce of proof is



worth a pound of claims!

For a permanent installation, such as a new water supply system, or extensions to an existing system, experienced engineers rarely take chances on a substitute for cast iron pipe. They know that 96% of all cast iron pipe, 6-inch and larger, laid in 25 representative cities over the past 130 years, is still in service. On the other hand, it is a fact that more than a few communities have had to replace water distribution systems, constructed with substitute pipe, long before the bonds issued against them were paid for.

The long life and low maintenance cost of cast iron water mains—and the consequent tax savings to the public—are matters of record. An ounce of *proof* is worth a pound of *claims!*

One of a number of cast iron water mains which have been in service in New York City for more than a century. Over 35 other cities have century-old cast iron mains in service.

CAST IRON ®

CAST IRON PIPE

America's No.1 Tax Saver

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CAST IRON PIPE RESEARCH ASSOCIATION, THOS. F. WOLFE, MANAGING DIRECTOR, 122 SO. MICHIGAN AVE., CHICAGO 3.

Briefs from the YEOMANS GUARD

10,000 Fish Per Minute Pumped From Ocean to Boat

Most dramatic application of recent years for the versatile centrifugal pump is the Yeomans Fish Pump System. The great purse net, alive with its wriggling catch, is hauled alongside the boat, a rubber hose 8 to 12 inches in diameter is lowered into it, and the fish are pumped aboard, literally in less time than it takes to tell it. 10,000 fish in a minute! Unblemished fish, no back-breaking labor, and no damage to nets!

Again, on reaching the dock another hose is lowered into the boat, the hold is flooded—and another Yeomans Pump on the dock unloads the catch in a small fraction of the time required for tedious manual unloading.

Thus has this modern high-speed Yeomans Fish-Handling System revolutionized the fishing industry; and a number of operators and boat owners have paid for their Yeomans Pumps twice, even three times, in a single season.

It's a natural, you say—and true enough; but more important, it suggests that there may well be countless similar "naturals" in the food and process industries, waiting for the dependable, sturdy efficiency of well-engineered Yeomans Pumps.

Settling Basin a "Must" When Sump Pump Handles Sub-Surface Drainage

A vast amount of trouble can be avoided—where a sump pump handles sub-surface drainage—if provision is made for a settling basin to settle out sand and grit. Without such a basin the sand and grit flow directly into a pump that was never intended to handle them—and serious damage to the pump bearing is almost a certainty.

It's a good way to prolong the life of a good pump.

We have a simple installation diagram—yours on request.

Have You A Hard-To-Handle Un-pumpable Material? . . . use a TRANSPORTER

Here's the right way to handle heavy, bulky, hard-to-handle materials that cannot be handled economically by centrifugal pumps or by mechanical conveyors—the Yeomans "Transporter."

It's ridiculously simple, completely automatic, utterly foolproof—you'll wonder "Why didn't somebody tell me these things?"

The "Transporter" is a pneumatic device that is suitable for such items as the following with extraordinary success: foundry sand, packing house wastes, tannery wastes, paper pulp, grain, food items, powdered coal, ashes, sludge, screenings, sugar, bagasse and others.

It saves time and work, handles small amounts or big tonnages; and one man at a panel can operate one unit or a multi-unit system. It will move batches to points of use. No moving parts. Ideally clean, self-scavenging—no messy maintenance, absolutely safe.

Inexpensive—very; to install, to operate, to maintain.

Want to know more?—write us.

Comes Soon the Gentle Spring . . . and the Yeomans Cellar Drainer to Keep Floods Out of the Basement!

All cellar drainers and small sump pumps operate the same way and look much alike—and there as a rule, the similarity ends.

We are wholly convinced that there is only one cellar drainer worth buying—and we make it. That conviction is confirmed by scores of big industrial buyers who have standardized on Yeomans, knowing that its heavy duty construction means years of dependable service, which more than offsets the higher original investment. The fact is that year after year, many Yeomans Cellar Drainers are sold to irate citizens and industrial buyers who bought cheaper pumps and lived to regret it. The pumps clogged, or the controls stuck, or impellers rusted—no pumps, flooded basements. After perennial exasperation and damage and excessive cost, a Yeomans Cellar Drainer is installed—*and that literally is the end of the matter.*

This Yeomans Cellar Drainer is built like a heavy-duty Yeomans municipal pump. It *will not clog.* Its impeller will not rust. Its dependable control will not stick. You just install it—and forget it.

There's more, of course—a bulletin for the asking; but it all leads to the same wholesome and inevitable conclusion.

The Yeomans Guard, published several times a year, is a compendium of new and useful information concerning the pumping of materials and the treatment of wastes, both domestic and industrial. We shall be pleased to send you the current issue if you'd care to have it.

YEOMANS BROTHERS COMPANY

1999-1 N. RUBY STREET, MELROSE PARK, ILLINOIS

Manufacturers of: Centrifugal Pumps and Pneumatic Ejectors for Buildings, Municipalities, and Industrial Applications, and a Full Line of Waste Treatment Equipment.

NEW PRODUCT BRIEFS

Ironsides Steam Hose is the name given to a **new type of steam hose** that combines wire braid and glass cord construction. The manufacturer is **Quaker Rubber Corp. Div., H. K. Porter Co., Inc., 1932 Oliver Building, Pittsburgh 22, Pa.** The hose is flexible and kinkproof, designed for working pressures up to 200 psi and comes in sizes from ½ to 1¼ in. I. D.

Concrete floors with the resiliency of oak is claimed by **Zonolite Co., 135 S. LaSalle, Chicago, Ill.** Floors consisting of vermiculite-sand concrete are said to combine the strength of the sand with the "give" of vermiculite, a spongy, granular material used as an insulating concrete aggregate in floor construction.

A universal-type snow plow wax is announced by **Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio.** Called SNOW-REM, it's applicable by brush or spray, is said to have unusual adhering qualities and produces an extra slippery surface that's said to increase daily plow mileage by 30%.

Latest **brick tongs** on the market are made **of lightweight magnesium.** They weigh only 2¼ lb, about one-third the weight of standard steel tongs, and can handle up to eight common brick. Grips are grooved to prevent brick slippage, and are capacity-rated by the manufacturer, **Magline Inc., Pinconning, Mich.**

A retractable reel for electric cable, labeled the Spring-O-Matic Powereel, can handle up to 150 ft of multiple conductor cable (up to #4) and can be mounted on floor, ceiling, right or left wall. A gasket-sealed housing protects the collector ring against dirt and moisture. Manufacturer is **Industrial Electrical Works, Dept. 36A, 1505 Chicago St., Omaha 2, Nebraska.**

Haskelite Mfg. Corp., Grand Rapids 2, Mich. has introduced its K-D **packaged flush door,** complete in one package. Door is drilled for the lock, butts are installed on the door and frame, jambs are notched for the header and trim is mitered. Six standard sizes range from 1 ft 6 in. to 3 ft in width.

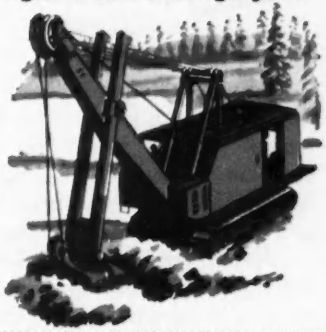
A new line of **Ball-Rite drills** is available from representatives of **Cummins-Chicago Corp., 4740 N. Ravenswood Ave., Chicago.** They have been under test for six years, according to the company, and are said to be equal to industrial drills selling at prices one-third higher.

CUMMINS DIESELS *are engineered to make light work of tough jobs*

Progressive, eyes-ahead engineering is one of the big reasons why so many construction men pick Cummins Diesels for dependability.

Consider Cummins' exclusive system of fuel injection and metering—an important factor in the unequalled performance records established by lightweight, high-speed (60-600 h. p.) Cummins Diesels. No other Diesel fuel system is so simple . . . so rugged! It delivers a uniform, properly prepared fuel charge to every cylinder. All under low pressure—no chance of bursting and leaking fuel lines.

Your Cummins dealer will be glad to tell you more about the exclusive fuel system and other engineering advantages built into every Cummins Diesel. He is an expert who knows the requirements of your job. He heads up a specialized parts and service organization—equipped to handle all your diesel power needs. Call him today . . . or write!



CUMMINS ENGINE COMPANY, INC.
Columbus, Indiana
Export: Cummins Diesel Export Corporation
Columbus, Indiana, U.S.A. • Cable: CUMDIEX

CUMMINS

®TRADEMARK REG. U.S. PAT. OFF. PENDING

Leaders in rugged, lightweight, high-speed diesel power!

Cummins Engine Company, Inc.
Columbus, Indiana ENR-153

Please send me the informative, illustrated booklet: "Dependable Diesel."

*Name*_____

*Company*_____ *Position*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

Landscaping Paving - Grading with HUBER MAINTAINERS

Hartford Contractor Keeps Two HUBERS Busy

Service station installations, roadways, parking areas and playgrounds are typical jobs in which the Kessler Construction Company of Hartford, Connecticut, specializes. They serve an area within a 50-mile radius of Hartford.

A pair of Huber Maintainers helps them get work done quickly and efficiently. The Hubers perform a variety of jobs, including rough and finish grading. R. E. Kessler, who founded the firm in 1940, likes the over-all efficiency of the Hubers.

Let your nearest Huber Distributor give you the facts about this 6,000-lb., 42½ H.P. machine and attachments that enable it to handle nine different kinds of work. Or write us for a free 16-page booklet fully describing the versatile, dependable Maintainer.

HUBER MANUFACTURING CO. • Marion, Ohio, U. S. A.

Manufacturers of Huber Maintainers, Graders and Complete Line of Rollers

HUBER

PUBLICATIONS

Steel Doors and Movable Partitions—Two booklets are available from Virginia Metal Products Corp., one on steel doors and frames and the other on movable steel partitions. The first has 8 pages of specs and information on single swing and double-acting doors, sliding door and frame units, fire doors and all types of engineered doors. The second, also an 8-pager, describes and illustrates flush and semi-flush type partitions, panel and industrial type, Mobilwalls, Mobilrails, Mobilscreens and wainscot for complete steel interiors. VIRGINIA METAL PRODUCTS CORP., 1112 FIRST NATIONAL BANK BUILDING, PITTSBURGH, PENNA.

Hydraulic couplings vs Torque converters—To help both the manufacturer and purchaser of equipment to understand better the application of hydraulic couplings and torque converters, Twin Disc Clutch Co. has published a 32-page special issue of PRODUCTION ROAD, titled "Coupling or Converter?"

The booklet is written in layman's language to explain hydraulic transmission of power and to acquaint the reader with meaning and characteristics of torque and the effects of torque on both driving and driven equipment. It starts by telling the reader that a hydraulic coupling only transmits input torque whereas a hydraulic torque converter multiplies torque—and continues on through specific advantages of each type drive as applied to industrial machinery. TWIN DISC CLUTCH CO., RACINE, WISCONSIN.

Industrial Controls—Complete information on temperature and humidity controls, motor-operated valves, control motors and many other products of Barber-Colman Co. are included in a 32-page booklet just released. It covers, as well, thermostats, temperature regulators, heating and air-conditioning controls, electrical accessories, etc. Requests for the booklet, labeled F-3941-2, should be sent to the advertising department of the Controls Division of BARBER-COLMAN CO., ROCKFORD, ILL.

Drill Presses—A 12-page catalog (No. 5206) covers the complete line of South Bend drill presses, illustrating the features with both photos and line drawings.

Included are a precision model, an economy model multi-spindle types and several attachments. SOUTH BEND LATHE WORKS, 425 EAST MADISON ST., SOUTH BEND 22, INDIANA.

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EDITORIALS

Commercial prefabs

SUCH A STRONG EFFORT has been made to sell prefabricated houses directly to the general public that other possible purchasers have been led to overlook their potentialities. Contractors, for example, might find commercial prefabs useful for temporary job villages. If these villages are to remain permanently as quarters for the operating personnel after the project is completed, so much the better. Or commercial prefabs might well be considered by builders of mass housing projects, who so far have attempted to do their own prefabrication.

These thoughts are prompted by the announcement of a new model house by Gunnison Homes, Inc., and by the existence in the prefab field of other similarly strong companies. To meet the competition of on-site builders, these prefabbers try to produce a good-quality house at a low cost. Their relatively high production rate and storage capacity should enable them to deliver house parts in time to meet tight construction schedules. Their houses can be erected fast. And, in addition, some prefabs are as easily disassembled as erected, so could be moved from job to job, if desired.

All these advantages make the commercial prefab worth considering in a new and broader light. Its potentialities are being hidden by present marketing methods.

Not so rosy

THE HASTY CONCLUSION that the Defense Department's new and uniform policy on contracting for the services of consulting engineers and architects (ENR Jan. 22, 1953, p. 21) marked a victory for the design professions is not going to stand up. More careful reading of the document has created rumblings of dissatisfaction. For the conclusion now is that the policy is not "new," but a warmed-over version of one proposed in 1951.

The design professions voiced two principal objections to that proposal: It involved the use, by the contracting officers, of curves purporting to show what the engineer's and architect's fees should be; and it required the engineer or architect to submit a detailed breakdown of his estimated costs to produce a design, then to figure his fee as a percentage of these costs.

The objection to the use of curves probably arises more from the fact that the military holds them secret than from a contention that a contracting officer should eschew all guides in satisfying himself that a fee is reasonable. Both as a guardian of public money and to protect itself against charges of extravagance or worse, the Defense Department needs some such guide. But why it should be a secret guide is not clear. As such it immediately becomes suspect.

As to the second objection, there seems to be little reluctance on the part of the design professions to submit detailed cost figures on cost-plus-fixed-fee contracts, but they balk at doing so on lump sum contracts. Here, where specifications and scope of work are clearly defined, construction cost can be closely estimated, and fees offered as a percentage thereof. If the Defense Department is not satisfied with the proposal it can reject it, but it has no right to demand the engineer's or architect's cost figures. That at least is the contention, and it is made as being in accordance with time-honored practice by the professions.

The net result in any event is that the hoped-for rapprochement between the Defense Department and the design professions has not been established by the new policy. Since cordial relations and a mutually satisfactory contract procedure are desirable, both sides should review their objectives and try again for an agreement.

More engineers through advertising

IN ENLISTING THE AID of expert advertising talent to convince more young men to become engineers (ENR Jan. 29, p. 25), the Engineering Manpower Commission does not—or should not—look upon this move as a substitute for other methods of doing the job. Advertising is not an end in itself. It makes the initial contact with the prospective customer, arouses and holds his interest, and creates a preference. Personal selling, with these obstacles removed, then takes over to complete the sale.

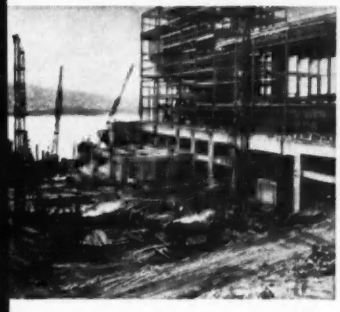
The engineering manpower quest has been handicapped by these same obstacles—and as a result the opportunities of engineering are not widely enough known. Thus the offer of The Advertising Council to enlist free talent and advertising space to present an "Engineers Wanted" message is welcome and will fill a need. If the campaign can impress the "mass mind," represented by parents, teachers and high school students, with the advantages of an engineering career, then the engineering salesmen will have a larger and a more receptive audience.

Engineering has a variety of salesmen, but perhaps the best known are the members of the student guidance committees of the Engineers Council for Professional Development that are active in many cities. Guidance teams from these committees go into the high schools to tell student groups what aptitudes they must have in order to be fitted for engineering; what the various kinds of engineering are; and what studies they must pursue to prepare for them.

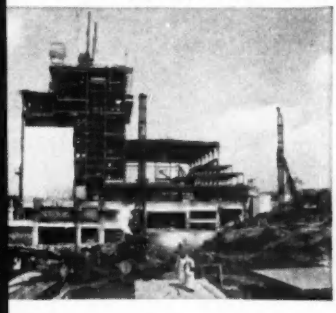
Now is the time for existing student guidance committees to intensify their efforts. Where such committees don't exist, local engineering organizations and sections of national societies should establish them, so all can take advantage of this new selling opportunity.

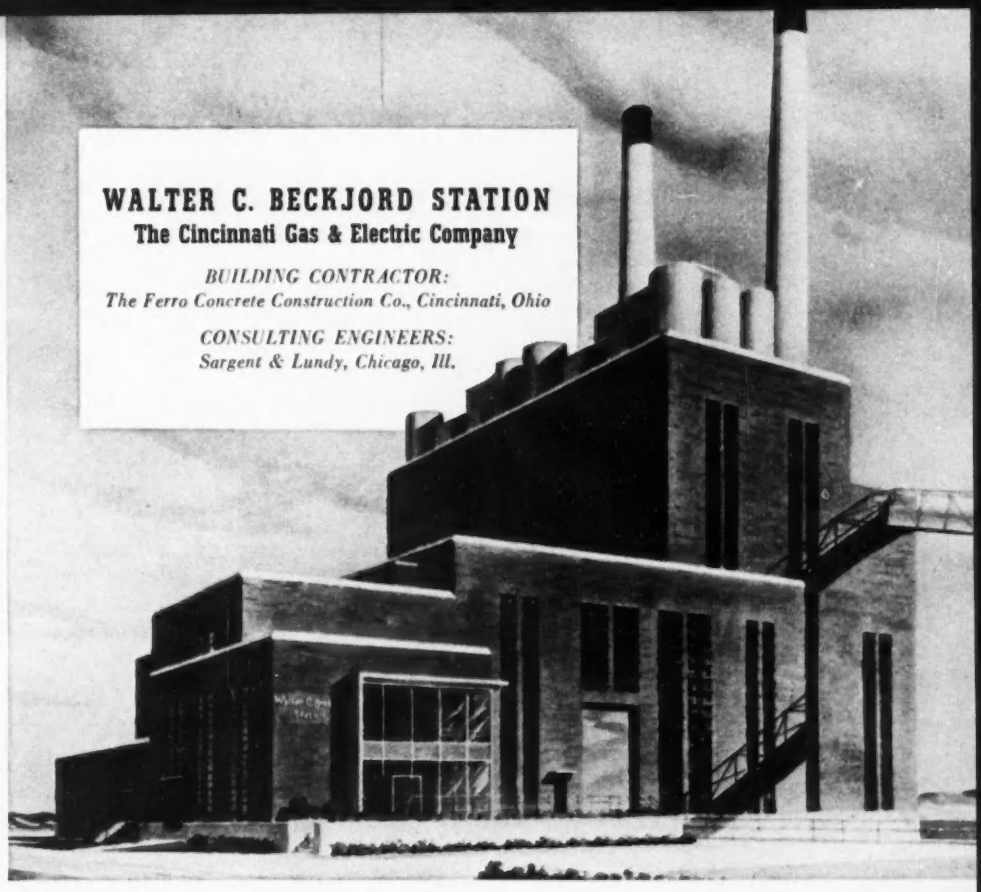
Raymond Step-Taper Piles in place for Unit #3 of the Beckjord Station.

Two Raymond rigs driving piles for the condenser well and piers.



The first unit of the Beckjord Station nearing completion. Raymond rigs are driving piles for the third unit.





WALTER C. BECKJORD STATION
The Cincinnati Gas & Electric Company

BUILDING CONTRACTOR:
The Ferro Concrete Construction Co., Cincinnati, Ohio

CONSULTING ENGINEERS:
Sargent & Lundy, Chicago, Ill.

Raymond HELPS BRING MORE POWER TO CINCINNATI

In May 1952 the first of three new units of the Cincinnati Gas & Electric Company's new Walter C. Beckjord Station was placed in service. The concentrated loads in the boiler room area of this 100,000-kilowatt installation are carried by Gow Caissons founded on bedrock. The remainder of the building is supported on Raymond Step-Taper Concrete Piles.

Your inquiry is cordially invited for foundation or heavy construction problems or projects . . . anywhere.

SCOPE OF RAYMOND'S ACTIVITIES
. . . Foundation Construction . . . Harbor and Waterfront Improvements . . . Soil Investigations . . . In-Place Pipe Lining . . . Specialized Construction

Raymond
CONCRETE PILE CO.

140 CEDAR STREET • NEW YORK 6, N. Y.

BRANCH OFFICES in Principal Cities of the United States and Central and South America

Compactor solves pressing problem for contractors... *with help of TIMKEN® bearings*

ITS exclusive "Rocking Beam" construction helps this patented Bros Roll-O-Pactor compact over 1,200 yards of dirt per hour. This new development distributes the load evenly on all tires and keeps them all squarely in contact with the ground even when riding slopes up to 19°. To allow free rocking and wheel oscillation, Bros engineers mount their "Rocking Beam" on Timken® tapered roller bearings.

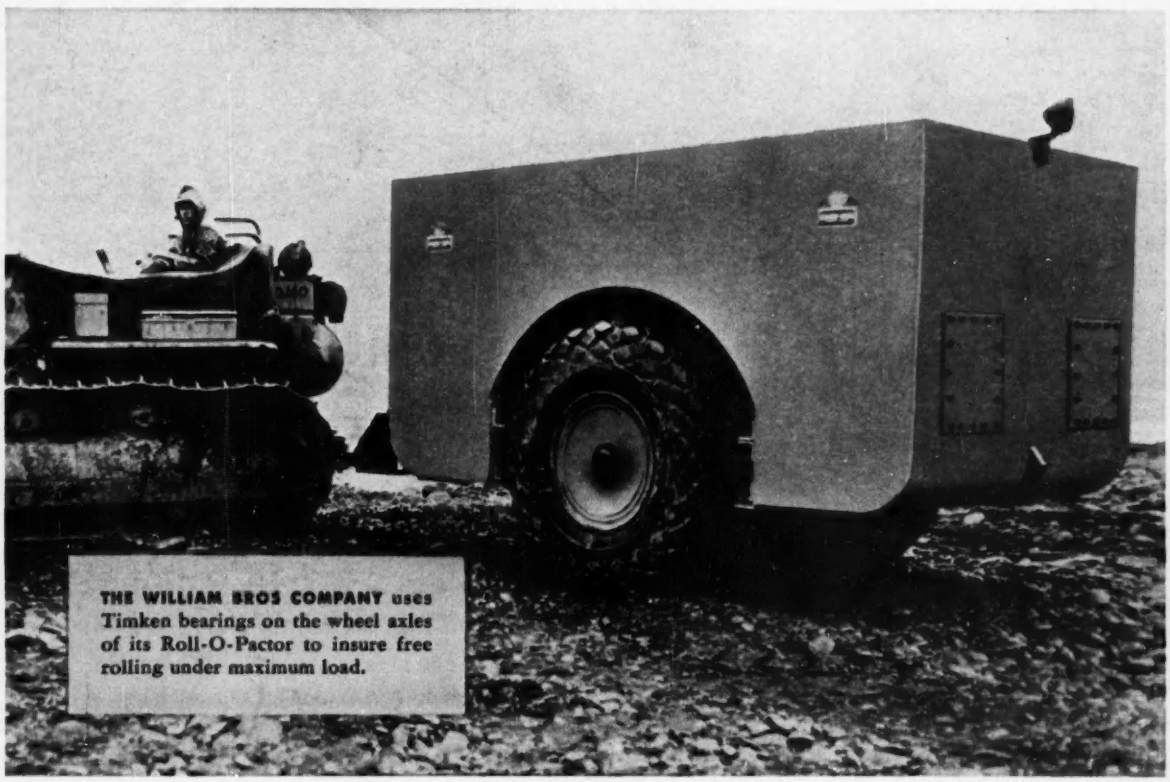
The tapered construction of Timken bearings enables them to take radial and thrust loads in any combination. Line contact between rollers and races gives them extra load-carrying capacity too. Shock loads are easily carried.

Closures are made more effective because Timken bearings hold shafts and housings concentric. Lubricant is kept in—dirt, dust and grime kept out.

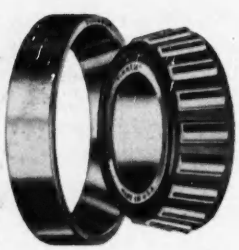
And the true rolling motion and incredibly smooth finish of Timken bearings practically eliminate friction.

Backed by over half a century of bearing research, Timken bearings are first choice throughout industry. Make sure you specify Timken bearings for the machinery you build or buy. Look for the trade-mark "Timken" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



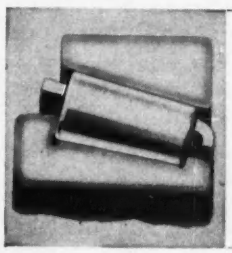
THE WILLIAM BROS COMPANY uses Timken bearings on the wheel axles of its Roll-O-Pactor to insure free rolling under maximum load.



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



GREATER LOAD AREA

Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

NOT JUST A BALL — NOT JUST A ROLLER — THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST — LOADS OR ANY COMBINATION